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FPIR / FEIR
OLMSTED PLAZA

A Redevelopment of the Sears Property
309 Park Drive/ 201 Brookline Avenue
In the Fenway

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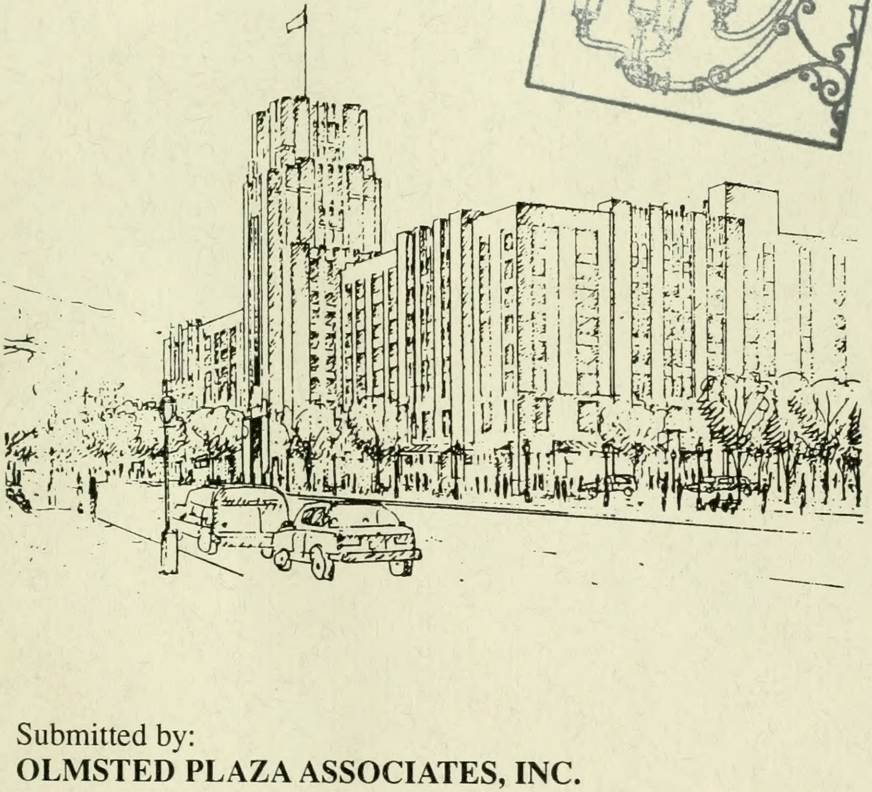

Submitted by:
OLMSTED PLAZA ASSOCIATES, INC.
Four Copley Place
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FINAL PROJECT AND ENVIRONMENTAL IMPACT REPORT

FOR

OLMSTED PLAZA

BOSTON, MASSACHUSETTS

JANUARY 2, 1989

Submitted by:

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3247/TRAN-1503

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1.0 APPLICANT INFORMATION

1.1 Project Identification

This document analyzes the Olmsted Plaza project, a large, mixed-use development to be undertaken in the Fenway district of Boston. The Project entails renovating the former Sears, Roebuck and Co. distribution facility and constructing two new commercial Project buildings and parking facilities (one on-site and one off-site) in a phased development.

1.2 The Development Team

Olmsted Plaza Associates, a Massachusetts general partnership, will be the developer of the Project. The partners of Olmsted Plaza Associates are a) JMB/Olmsted Limited Partnership, an Illinois limited partnership with JMB/Olmsted, Inc., an Illinois corporation, as its general partner, and b) Macomber Olmsted Plaza Associates Limited Partnership, a Massachusetts limited partnership with MOPA, Inc., a Massachusetts corporation, as its general partner.

The development team for the Project includes several advisors and consultants that have contributed to the compilation of the information presented in this document. Key members of the development team are:

Attorneys:	Hale and Dorr
Architects:	Notter Finegold + Alexander, Inc.
Development Advisors:	Trinity Financial
Environmental Consultants:	HMM Associates, Inc.
Geotechnical Consultants:	Goldberg Zoino & Associates, Inc.
Landscape Consultants:	The Halvorson Co., Inc.
Mechanical Engineers:	R.G. Vanderweil Engineers, Inc.
Construction Consultants:	George B.H. Macomber Co.
Housing Consultants:	Stockard & Engler
Employment Consultants:	Mount Auburn Associates

The project manager and designated contact person for each of these organizations, together with business addresses and telephone numbers, are included in the Project Directory which is attached as Appendix A of the DPIR/DEIR.

1.3 Currently or Formerly Owned Developments in Boston

Olmsted Plaza Associates has not undertaken any previous developments in Boston. Affiliates of the partners of Olmsted Plaza Associates have been involved in several projects in Boston. A list of these projects is included as Appendix B of the DPIR/DEIR.

1.4 Legal Actions Pending

There are no legal judgments or actions pending concerning the Project.

1.5 Tax Arrearages

There is no history of, or current, property tax or 121A arrearage on the properties in Boston owned by the Applicant or either of its general partners.

1.6 Evidence of Site Control

The Project consists of the development of an 8.9 acre parcel of land located at 201 Brookline Avenue (the "Site") currently owned in fee by Sears, Roebuck and Co., a New York corporation ("Sears"). Sears and Olmsted Plaza Associates have entered into a purchase and sale agreement and anticipate the transfer of the Site to Olmsted Plaza Associates on December 28, 1989. This purchase and sale agreement also provides for the simultaneous transfer of three other properties currently owned in fee by Sears. These three properties are 1) a surface parking lot at the corner of Yawkey Way and Van Ness Street (the "Van Ness Site"); 2) a surface parking lot at the corner of Jersey Street and Peterborough Street (the "Peterborough Site"); and 3) a parcel across Park Drive from the Sears Building (the "Park Site"). The purchase and sale agreement provides for a simultaneous transfer of the Park Site from Sears to the City, or another governmental body, or a not-for-profit organization acceptable to Olmsted Plaza Associates. The title insurance commitment attached as Appendix C of the DPIR/DEIR sets forth a list of covenants and restrictions affecting the Site and the nature and extent of public access easements into, through or surrounding the Site.

1.7 Regulatory Status

The Project is subject to the Massachusetts Environmental Policy Act (MEPA) environmental review requirements. The project is one for which an Environmental Impact Report is categorically required.

The Site falls outside the Downtown/Northern Avenue Corridor Area boundaries to which Article 31 of the Boston Zoning Code applies. At the request of the BRA, however, Olmsted Plaza Associates has agreed to voluntarily undertake the Article 31 review process. Accordingly this report has been compiled and is being submitted as joint Final Project Impact Report/Final Environmental Impact Report (FPIR/FEIR). This document responds to the comments on the joint DPIR/DEIR filed September 29, 1989. Attached as Appendix I are the BRA Preliminary Adequacy Determination and the MEPA Certificate for this document.

The developers have been granted Planned Development Area (PDA) status for the project. To this end the project has been before the Boston Redevelopment Authority (BRA) Board on two occasions. On November 16, 1989, the BRA held a public hearing on the project. The Board continued the hearing on November 30, 1989 to hear additional information on issues of concern. By the close of the second session, representatives of all major groups participating in the hearing cited support for the project and its PDA. The Board voted unanimously to grant the PDA designation.

The Project is also subject to a series of Federal, State and local permit requirements. A list of these are attached as Appendix D is of the DPIR/DEIR. Applications for these permits will be submitted beginning in December 1989. The list of permits included as Appendix E is subject to change based upon refinements in the design of the Project.

1.8 Financial Information

Total development cost is estimated to be $270,000,000. This estimate includes land costs, construction costs, interest carrying costs, and initial operating losses. A detailed breakdown of hard and soft costs, and a ten year operating pro forma have been submitted to the BRA under separate cover.

2.0 PROJECT UPDATE

Work on the Olmsted Plaza project has continued at a significant pace since the filing of the DPIR/DEIR. The nature of the work may be broken into three categories: 1) refinements to the design of the project, 2) additional technical studies, and 3) continuation of the discussions with regulatory agencies and concerned citizens. The physical changes to the basic design of the project proper since the filing of the DPIR/DEIR on September 29, 1989 have been relatively modest. The proponent attributes this to the fact that the project has been thoroughly reviewed and critiqued through most of the calendar year, and the major changes in project design (reductions in height and floor area and modifications to the site plan) were accomplished prior to filing the draft report. The new technical studies, on the other hand, have been substantial. They entail major revisions to the transportation analysis, including development of comprehensive mitigation plans. They also include the housing and employment studies, minor revisions to the environmental component of the report, and detailed responses to the comments from State and City agencies and the concerned public.

The continuing discussions have also constituted a major effort. The developer and its consultants have participated in a nearly continuous stream of working meetings and public presentations. This effort has resulted in the identification and resolution of the significant issues relating to the construction and operation of the project. The success in resolving the major issues is evidenced by the community and City support for the project at the conclusion of the Planned Development Area (PDA) hearings before the BRA Board on November 30, 1989.

2.1 Refinements to the Project Designs

In response to community concern regarding potential shadow impacts from the Park Drive building, the upper two floors have been set back, removing approximately 11,000 gsf. The current area of the Park Drive building is 223,000 gsf.

Olmsted Plaza will now consist of 1,446,000 square feet of research and development, office and retail and related space. A detailed site plan is shown in Figure 2-1. The mix of uses may include more medical R&D space than originally planned with less office space. The retail components should remain as reported in the DPIR/DEIR. The day care center will be 8,000 square feet, but it will accommodate 100 instead of 80 children. The increase in day care capacity is a response to community requests to increase this valuable service. Increases in

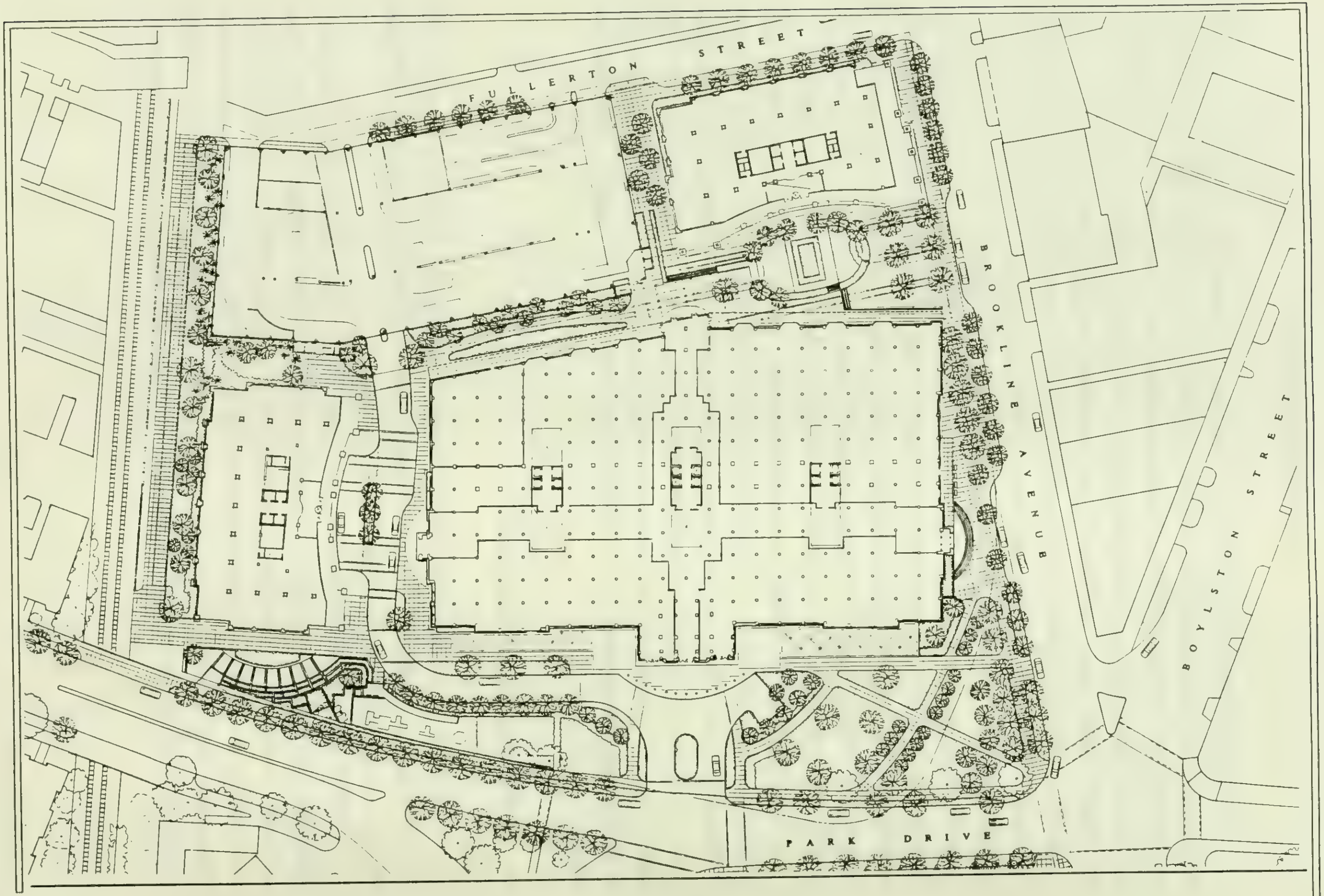


FIGURE 2-1
SITE PLAN

R&D space may be made in response to market conditions. At this time, it is anticipated that two thirds of the developed space will be leased for R&D uses. Table 2-1 summarizes the revised Development Program.

The DPIR/DEIR reported that the Brookline Avenue Building could be constructed as either office space or hotel space. After reviewing market conditions the office alternative appears much more likely. The economics of the hotel option make it a distant second choice at this time.

Probably the single most significant refinement to the project design is the modification to the parking element. The DPIR/DEIR reported that all parking was to be provided in a single, 1525-space garage on the site. The garage design included eight parking levels above ground, with service access to the project provided below ground level. The garage was to be built in two phases. In Phase I, which was coincident with the Phase I renovation of the Sears Building, the proponent planned to construct the first five levels of the garage, together with the subsurface service area. The parking supply in the first phase of the garage was to be supplemented by temporary surface parking lots at the site of the two Phase II buildings (i.e., the Park Drive Office Building and the Brookline Avenue Building). During Phase II the remainder of the garage was to be completed, and the surface parking eliminated.

Project critics resisted this concept citing two underlying issues. First, several people cited aesthetic differences with the design. They expressed the opinion that the garage was simply too big a mass to place on the site. The eight story, open air garage was considered unappealing. Its height and footprint, in combination, were perceived to be intimidating, both from the perspective of activity on the site, and from the perspective of abutters to the north of the site. Second, several critics suspected the garage was too large from a traffic generation standpoint. It was hypothesized that traffic impacts could be ameliorated by reducing the number of parking spaces on the site.

After considerable debate the City directed Olmsted Plaza Associates (OPA) to design and consider a split parking design. The split parking design includes shrinking the on-site parking garage, while simultaneously developing a smaller satellite parking garage on the Van Ness Street parcel included in the acquisition.

The new on-site design calls for spaces on six levels above grade including roof parking. The below grade level will be fully excavated to allow for 100 parking spaces while maintaining the truck access and egress to the loading docks. The ground floor level will still provide access between Fullerton Street and Park Drive. In addition, it will provide parking for 45 vehicles. This will be broken up into 24 short term spaces and 21 handicapped spaces.

TABLE 2-1
OLMSTED PLAZA PROGRAM

		Area Allocation
1.	SEARS BUILDING	
	Total Area	907,000 gsf
2.	BROOKLINE AVENUE BUILDING	
	Total Area	316,000 gsf
3.	PARK DRIVE BUILDING	
	Total Area	223,000 gsf
4.	GARAGES	
	On-Site Garage (1155 spaces)	390,000 gsf
	Van Ness Garage (440-500 spaces)	163,000 gsf
	Total Area	553,000 gsf
PROJECT TOTAL EXCLUSIVE OF GARAGE SPACE		1,446,000 gsf

There will be 150 spaces on the second floor and 210 spaces on floors three through five. The roof will provide 225 spaces, giving the garage a total capacity of 1155 vehicles. The garage will be completed during the first phase of construction instead of being built in phases. This will allow for more interim parking on site between build out years. It will also reduce the amount of construction associated with the second phase of development. Figure 2-2 is an elevation plan with orientation from the south.

The new Van Ness Street garage is in the preliminary design stage at this time. The garage will be constructed at grade with a half level basement excavated. It will provide parking on five levels (including the roof). There will be approximately 45 spaces on the basement level, 100 spaces per floor on the levels above grade, and 33 spaces on the roof, for a total of 499 spaces. The garage will be in a double helix layout, two bays wide with angled spaces and two-way traffic. It will have an entrance on Van Ness Street, approximately 700 feet west of Yawkey Way. A two-lane exit will be on Van Ness Street 50-60 feet west of Yawkey Way. Figure 2-3 is a preliminary design concept for the first floor of the Van Ness garage. Steel columns and beams will support concrete decks. Pre-cast concrete will be used and there will be architectural trim on the facades. The garage will be approximately 163,000 square feet. The total amount of spaces for the project with the split garage concept will increase from 1525 to 1595-1655.

Plans for the "Missing Link" or Riverway Park have also been revised slightly over the last two months. Figure 2-4 is a revised concept plan for the Park. There will no longer be flowered plantings along the original location of the water course. Instead there will be a restored softscape with plantings at the perimeter of the park. The overall design will attempt to regain a consistency with the adjacent areas of the Emerald Necklace. There will be minimal buffering to the surrounding traffic, with the design permitting entrance to the park from all four sides. A Riverway Park Design Advisory Committee is presently being formed by the Boston Parks and Recreation Department. This committee will oversee the reconstruction of the park and will strongly influence design through the short and long term.

Originally, Olmsted Plaza Associates suggested using subsidies from two years of interim parking on the Missing Link parcel to help fund the park's reconstruction. In an effort to assure that the park reconstruction schedule will coincide with the completion of Phase I of the development, OPA has committed to having the park completed by no later than July 1, 1992. In addition, OPA has agreed to lead the fundraising effort for the $1.1 million in design and capital funds required to complete the park. Permits for commencing with Phase II of the project will be linked with the successful completion of this fundraising campaign.

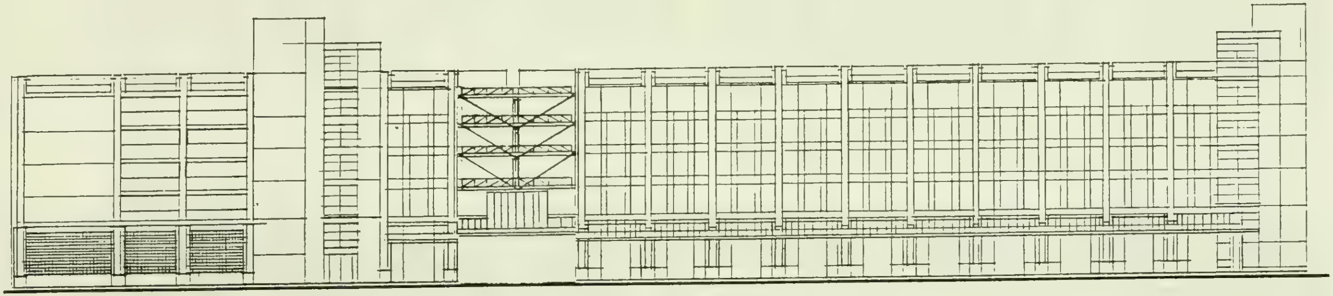


FIGURE 2-2
ON-SITE GARAGE ELEVATIONS

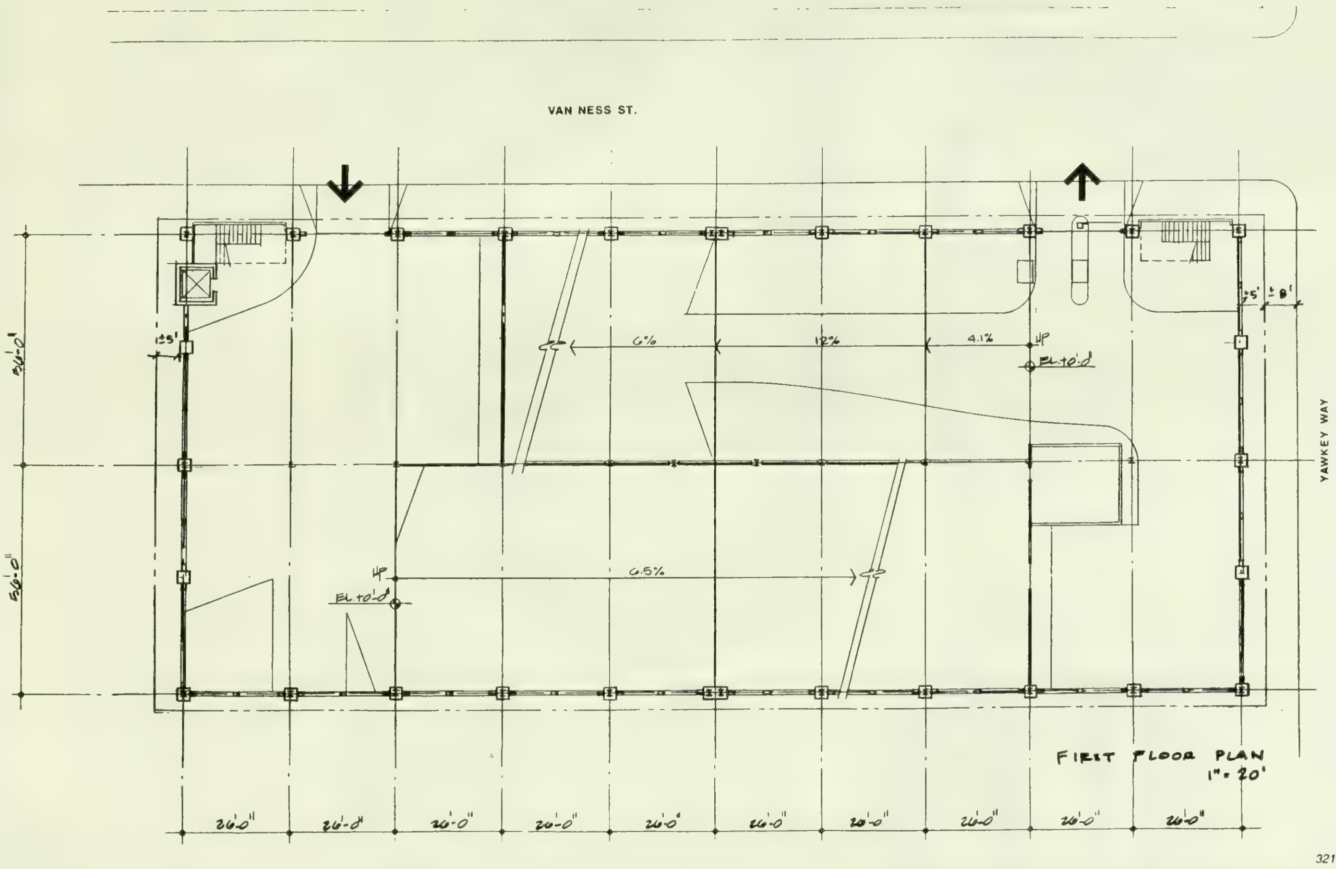


FIGURE 2-3
VAN NESS GARAGE - FIRST FLOOR PLAN

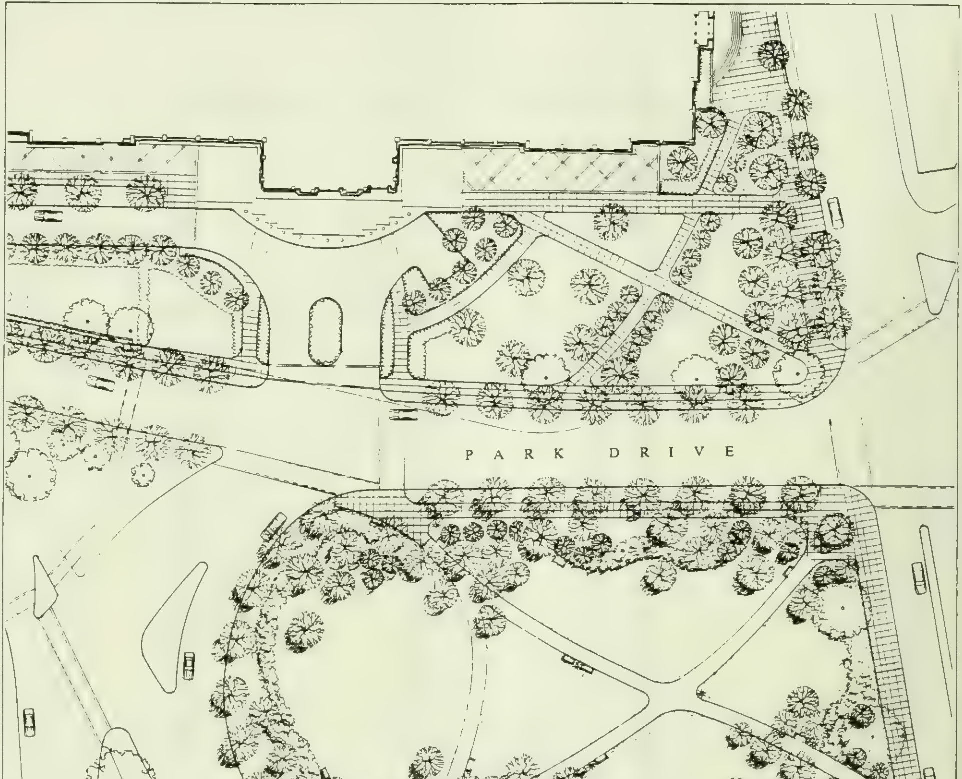


FIGURE 2-4
REVISED CONCEPT PLAN - RIVERWAY PARK

Refinements in the project design also include major commitments to mitigating transportation impacts. These commitments are discussed, in some detail, in Section 3 of this report. They are also discussed in Appendix VI, the Transportation Access Plan Agreement between the proponent and the Boston Transportation Department.

2.2 Additional Technical Efforts

The majority of the additional technical information is related to traffic. Two new intersections have been added to the traffic network. The entire expanded network of 26 intersections has been reanalyzed assuming the split parking design. This analysis is described in Section 3, with supporting data included as Appendix II. The most recent version of the Housing Impact Study is included as Appendix III. A short summary of this report can be found in Section 4. A copy of the Employment Impact Study is included as Appendix IV and summarized in Section 5. Additional technical efforts relating to environmental and infrastructure concerns are included as responses to comments in Section 6.

This section also includes responses to some of the issues raised in the Preliminary Adequacy Determination (PAD) drafted by the BRA. The PAD is included in Appendix I.

Copies of the Chapter 21E site assessment report and the report of the presence of asbestos are bound under separate cover and can be obtained by contacting Sam Gifford at HMM Associates, 508-371-4327. The BRA also requests information found in the Cooperation Agreement for Planned Development Area No. 36, Olmsted Plaza. Section 18 is included in its entirety below.

> Section 18 - The Applicant agrees that it shall comply, and all tenants of space in the Project shall be required to comply, with all federal, state and local statutes, and any regulations promulgated thereunder, relating to the generation, processing and disposal of medical wastes, hazardous substances and hazardous wastes and to the operation and maintenance of health care facilities and medical laboratories.
>
> The Applicant agrees that the building management staff of the Project shall include an individual who is familiar with the tenant activity within the Project and with the applicable statutes and regulations relating to medical wastes, hazardous substances and hazardous wastes and the operation and maintenance of health care facilities and medical laboratories. Such individual shall be prepared to coordinate a response to any emergency which might occur at the Project involving

> medical wastes, hazardous substances or hazardous wastes. The Applicant agrees to use reasonable efforts to cause information relating to tenant activities involving any of such substances to be available to the public, except to the extent any such information may be proprietary or a trade secret.
>
> The Applicant shall include in all leases for laboratory space at the project a requirement that all experiments involving the use of animals conducted at Olmsted Plaza shall be conducted in conformity with legal requirements of the current Guide for the Care and Use of Animals of the National Institute of Health and succeeding and revised editions thereof, the Animal Welfare Act (7 U.S.C. Section 2131 et seq.) and the federal regulations pursuant to said Act, the Public Health Service Policy on Humane Care and Use of Laboratory Animals, all as amended from time to time, statutes and regulations of the Commonwealth of Massachusetts, and ordinances, executive orders and regulations of the City of Boston.

In addition, it is anticipated that tenants will produce only small amounts of low-level radioactive, biological, and chemical wastes. No hazardous chemicals will be discharged into the waste or trash systems of the building.

A tenant's low-level radioactive waste must be segregated and handled in accordance with NRC regulations. Typically, isotopes with half-lives of less than 90 days are "decay-stored" for 10 half-lives (until they have decayed to background) and disposed of via normal trash systems. Other radioactive materials are packaged and hauled away by a licensed hauler such as ADCO, RADIAC, or NDL.

Disposal of biological and/or potentially infectious waste by tenants would be handled in accordance with the Mass. Department of Public Health Code 105 CMR 480.00 Sanitary Code Chapter VIII. Typically, chemical disinfectants and/or autoclave sterilization are used to inactivate waste. It is kept segregated from other trash and then packaged and hauled away by licensed commercial haulers such as DECOM, MEDI GEN, or BFI.

A tenant's chemical waste is also segregated and hauled away by a licensed commercial hauler such as Clean Harbors or AETC, in accordance with OSHA, EPA, and state DEP guidelines. The discharge of effluent vapors by a tenant falls under the state DEP Division of Air Quality Control Regulation 310 CMR 7.02, and tenants will register their (small) expected effluent vapor amounts by submitting a Form DDS-3.

While these disposal requirements are the compliance responsibility of each tenant, the base building systems have been specified and designed to assure tenants can meet all codes and regulations. For example, segregated potable and non-potable water supply systems, separate lab and sanitary waste systems, and a direct injection acid-base neutralizing system are included in the base building plumbing system. Sufficient shaft and roof space has been allocated to permit individual exhaust of all fume hoods, and ample, isolated, but easily-accessible storage areas have been allocated in the basement level for waste storage and removal.

Fresh air intakes will be supplied by louvers at the rear of the Sears Building 17' to 32' above grade. This air will be filtered. Lab exhausts will be ducted directly to the roof where they will be released to the atmosphere 12' above the main roof level (112' above ground level). Contaminants from potable water supplies will be controlled by the use of reduced pressure backflow preventers at all laboratories.

3.0 TRANSPORTATION ISSUES

3.1 Introduction

Since the filing of the DPIR/DEIR Olmsted Plaza Associates and its transportation consultants have continued to study key transportation issues. In response to comments raised by transportation agencies and the general public a large amount of supplementary analysis has been undertaken. The supplementary work includes the gathering and reporting of additional traffic counts, corrections to mistakes in earlier analysis, studies of new and revised traffic circulation concepts, and an expansion of the descriptions of means for mitigating traffic impacts.

For each of the four transportation components (i.e., traffic, public transportation, parking, and pedestrian circulation) this FPIR/FEIR addresses three basic conditions. First the analysis describes Existing Conditions. This is a description of the transportation systems that exist today. Next the analysis attempts to describe No-Build Conditions. These are the conditions that are to be expected in the future, without the Olmsted Plaza development. The No-Build case includes growth in demand for transportation resources from projects other than the proposed project. The No-Build conditions reflect expected non-project related growth in transportation demands through the year 1995, the year for which it is likely that project build out will be completed. Next the analysis calculates the project-related demand for transportation resources. The project-related demands are superimposed upon the No-Build demands to describe the Build Conditions, which estimate total future transportation demand impacts. Total project related demands are also estimated for a time frame representative of project completion in 1995.

The DPIR/DEIR analyzed several circulation options in its traffic analysis. These included the existing street system, both with and without a "Maitland Street Connector". The earlier analysis also included four alternate circulation plans: 1) the Sears Rotary; 2) the Riverway/Park Drive "T"; 3) the U.S. One-way Couplet; and 4) the U.K. One-way Couplet. After reviewing the HMM studies of these scenarios, and in response to public comments, the City suggested that the traffic studies be significantly updated and expanded. First the traffic consultants were directed to assume that project parking would be revised. In the new design concept it is assumed that the main garage is reduced in size from the 1525 spaces, reported in the DPIR/DEIR, to 1150 spaces. At the same time it is assumed that a satellite garage will be established off site, on the Van Ness Street parcel being acquired by the Applicant. A total of 499 spaces is assumed at this second location to make up for the reduction of spaces at the main site. Second, a revised set of circulation systems was suggested for analysis in the FPIR/FEIR. The four new scenarios are:

- Build, No Mitigation
- Build, With Brookline Avenue 5-Lane Section and Mitigation
- Build, With Brookline Avenue 5-Lane, Pure Rotary and Mitigation
- Build, With Pure Rotary, Short U.S. Couplet, and Mitigation

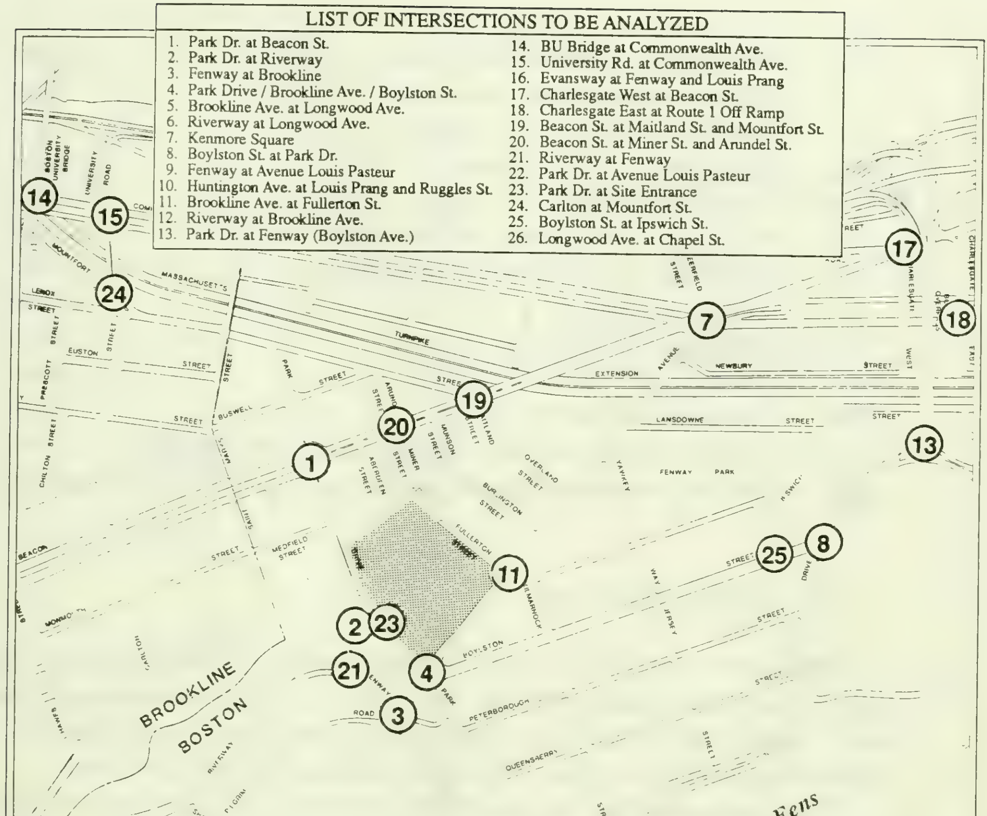
Third, and last, the City directed Olmsted Plaza Associates to investigate the temporary impacts of the short term use of the Missing Link parcel as a leased parking lot. As noted previously, the lot will be used for approximately two years to generate income to be used to subsidize the renovations to the park.

3.2 Existing Traffic Operations

3.2.1 Traffic Study Area for Olmsted Plaza

Following submission of the DPIR/DEIR the traffic consultants were asked to include two additional locations in the study impact area. The expanded impact area addressed in this report is shown in Figure 3-1. As expanded for the FPIR/FEIR the traffic study area includes a total of 26 intersections, which are listed below.

No.	Intersection	Date Counted
1.	Park Drive at Beacon Street	4/12/89
2.	Park Drive at Riverway	4/19/89
3.	Fenway at Brookline	4/19/89
4.	Park Drive/Brookline Avenue/Boylston Street	4/19/89
5.	Brookline Avenue at Longwood Avenue	4/19/89
6.	Riverway at Longwood Avenue	4/12/89
7.	Kenmore Square	6/1/89
8.	Boylston Street at Park Drive	4/13/89
9.	Fenway at Avenue Louis Pasteur	4/13/89
10.	Huntington Avenue at Louis Prang & Ruggles Street	4/13/89
11.	Brookline Avenue at Fullerton Street	4/13/89, 6/6/89
12.	Riverway at Brookline Avenue	6/13/89
13.	Park Drive at Fenway (Boylston Street)	6/12/89



LIST OF INTERSECTIONS TO BE ANALYZED

1. Park Dr. at Beacon St.
2. Park Dr. at Riverway
3. Fenway at Brookline
4. Park Drive / Brookline Ave. / Boylston St.
5. Brookline Ave. at Longwood Ave.
6. Riverway at Longwood Ave.
7. Kenmore Square
8. Boylston St. at Park Dr.
9. Fenway at Avenue Louis Pasteur
10. Huntington Ave. at Louis Prang and Ruggles St.
11. Brookline Ave. at Fullerton St.
12. Riverway at Brookline Ave.
13. Park Dr. at Fenway (Boylston Ave.)
14. BU Bridge at Commonwealth Ave.
15. University Rd. at Commonwealth Ave.
16. Evansway at Fenway and Louis Prang
17. Charlesgate West at Beacon St.
18. Charlesgate East at Route 1 Off Ramp
19. Beacon St. at Maitland St. and Mountfort St.
20. Beacon St. at Miner St. and Arundel St.
21. Riverway at Fenway
22. Park Dr. at Avenue Louis Pasteur
23. Park Dr. at Site Entrance
24. Carlton at Mountfort St.
25. Boylston St. at Ipswich St.
26. Longwood Ave. at Chapel St.

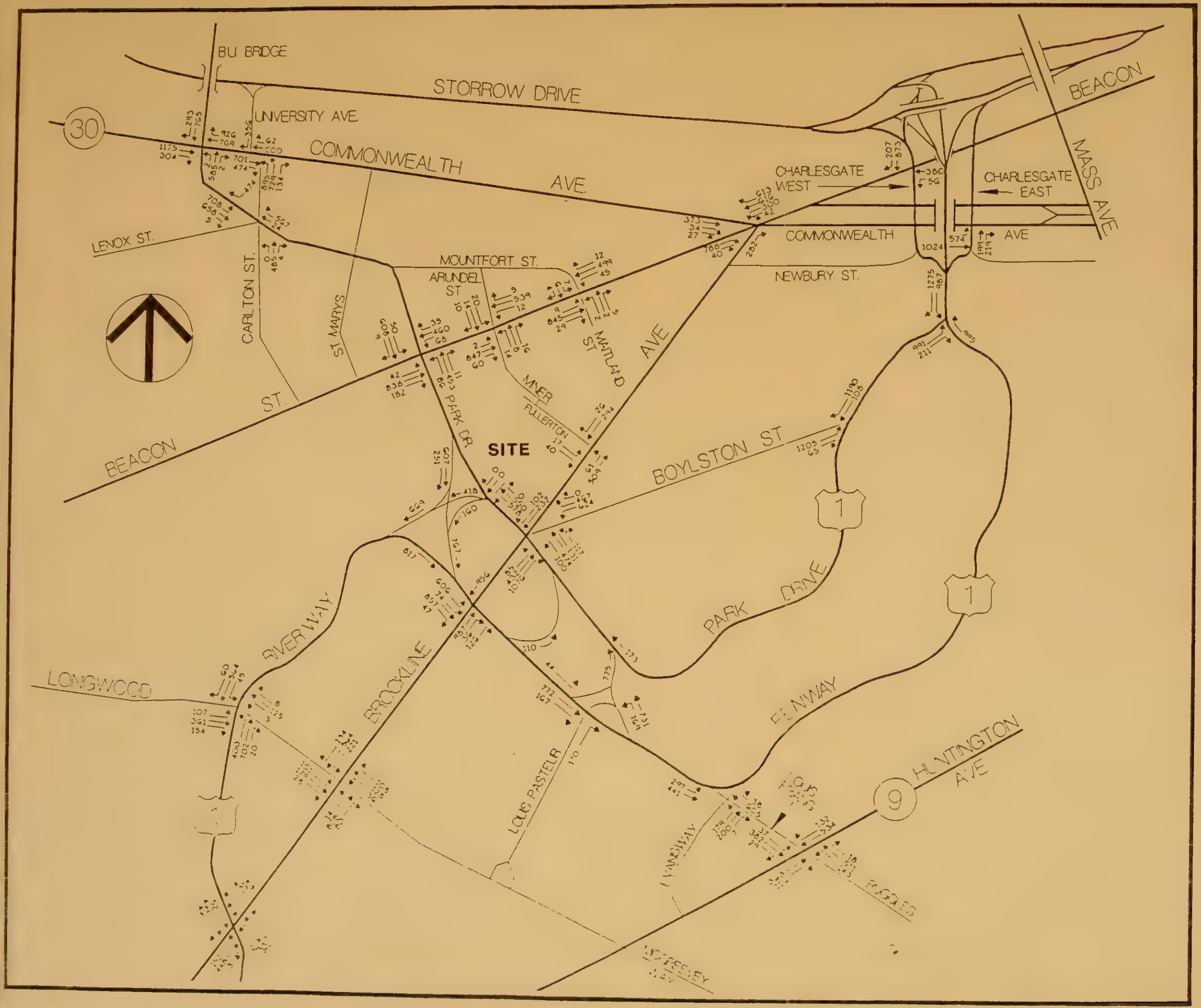
FIGURE 3-1
FINAL PROJECT IMPACT AREA

14.	B.U. Bridge at Commonwealth Avenue	7/10/89
15.	University Road at Commonwealth Avenue	7/10/89
16.	Evansway at Fenway and Louis Prang	7/12/89
17.	Charlesgate W. at Beacon Street	7/11/89
18.	Charlesgate E. at Route 1 Off Ramp	7/11/89
19.	Beacon Street at Maitland Street & Mountfort Street	7/11/89
20.	Beacon Street at Miner Street & Arundel Street	4/12/89
21.	Riverway at Fenway	4/13/89
22.	Park Drive at Avenue Louis Pasteur	4/19/89
23.	Park Drive at Site Entrance	4/19/89
24.	Carlton Street at Mountfort Street	7/10/89
25.	Boylston Street at Ipswich Street (added pursuant to BTD request)	11/2/89
26.	Longwood Avenue at Chapel Street (added pursuant to MDC request)	11/10/89

3.2.2 Existing Traffic Volumes

Traffic volume data for the 26 locations were obtained by a phased traffic count program conducted from April through November. The dates of each of the traffic counts are shown above. Fourteen (14) locations were counted during the spring, and ten (10) locations were counted during June, July and August. The last two (2) counts were taken in November.

Turning movement counts were conducted by HMM Associates during the 7-9 AM, and 4-6 PM weekday peak hours. These manual turning movement counts were recorded with subtotals at 15-minute intervals. A tabular summary of these counts is on file at HMM. The peak hour for the study area was determined by reviewing 15-minute count volumes for all 26 locations, and determining the heaviest four consecutive 15-minute intervals. The AM peak hour for the study area is 7:45 to 8:45 AM. The PM peak hour for the study area is 4:45 to 5:45 PM. Since the counts were taken on different days of the week, daily fluctuations in vehicle traffic can be expected. The traffic engineers adjusted or balanced the intersection volumes where possible. Adjacent intersections having numerous midblock driveways or parking/unparking vehicles were not balanced. This method of refining study area peak hour data was used so that vehicle flows from one location to the next could be verified, and also so that signal progressions for adjacent intersections could be based upon a single volume during the same four 15-minute periods. The following Figures (3-2, 3-3) show the AM and PM peak hour traffic volume flow maps.



OLMSTED PLAZA

AM 1989 EXISTING TRAFFIC VOLUMES

FIGURE 3-2

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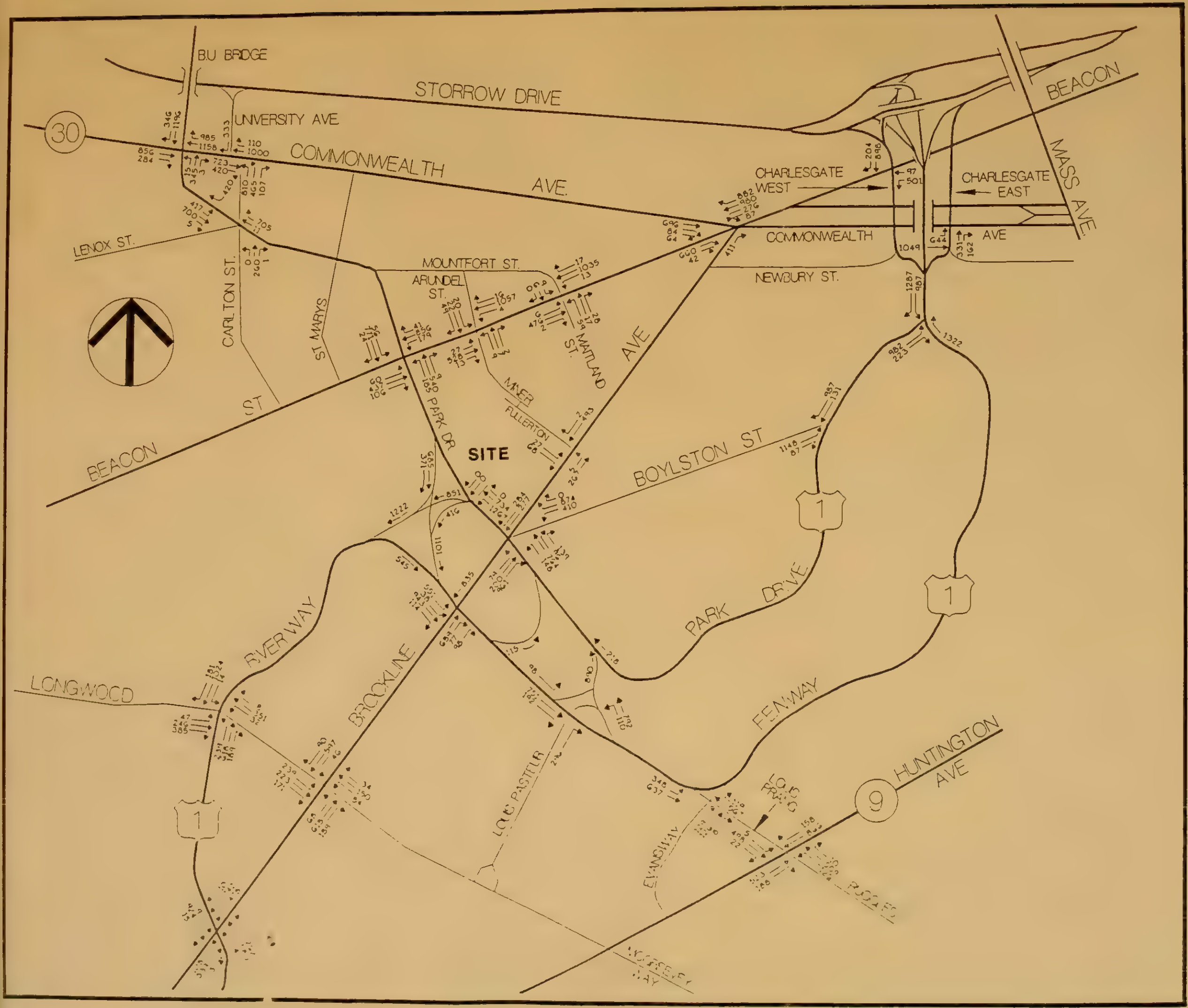

OLMSTED PLAZA

PM 1989 EXISTING TRAFFIC VOLUMES

FIGURE 3-3

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3.2.3 Existing Traffic Operations

Traffic operations were analyzed according to standard procedures and practices outlined in the 1985 Highway Capacity Manual.[1] The efficiency of traffic operations at a location (or changes in traffic operations), is measured in terms of Level of Service (LOS). The LOS refers to the quality of traffic flow along roadways and at intersections. It is described in terms of Levels A through F; where A represents the best possible free flow traffic conditions, and F represents congested, forced-flow or failing conditions.

At signalized intersections, LOS is defined in terms of average approach delays. For unsignalized intersections, reserve capacities are used to determine LOS. These measures are discussed briefly below, and Table 3-1 summarizes their interrelationships. Average delay measures the mean stopped delay experienced by vehicles entering a signalized intersection during the peak hour period. Average delay is measured for each individual approach and for the intersection as a whole. The LOS provided deteriorates with increasing average delays. The reserve capacity is the unused capacity of an approach lane(s) to an intersection. This measure, defined in passenger cars per hour, indicates how many more vehicles using an individual approach would be required to bring the intersection leg to capacity.

Tables 3-2 and 3-3 show the existing levels of service for the 26 intersections in the Olmsted Plaza impact area. Both show that the perception that there are traffic congestion problems is well founded. During the morning peak hour 15 of the 26 intersections achieve levels of service from A through D, while 11 intersections show existing levels of service from E to F, with most of the latter in the severely congested "F" range. The afternoon peak hour also shows 15 intersections in the A to D range, and 11 in the more congested E to F range.

Six of the congested intersections from the morning peak are in the Riverway/Brookline Avenue corridor. This may be seen by the following LOS ratings:

Riverway/Brookline	LOS F
Brookline/Longwood	LOS F
Brookline/Boylston/Park	LOS F
Riverway/Longwood	LOS F
Kenmore Square	LOS D
Boylston/Ipswich	LOS F

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1. Transportation Research Board, Highway Capacity Manual, Special Report 209, 1985.

TABLE 3-1

LEVEL OF SERVICE (LOS) DESIGNATIONS*

Category	Description	Delay Range** (Seconds/ Vehicle)	Reserve*** Capacity (Vehicles /Hour)
LOS A:	Describes a condition of free flow, with low volumes and relatively high speeds. There is little or no reduction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.	0.00-5.0	400
LOS B:	Describes a condition of stable flow, with desired operating speeds relatively unaffected, but with a slight deterioration of maneuverability within the traffic stream.	5.1-15.0	300-399
LOS C:	Describes a condition still representing stable flow, but speeds and maneuverability begin to be restricted. The general level of comfort begins to deteriorate noticeably at this level.	15.1-25.0	200-299
LOS D:	Describes a high-density traffic condition approaching unstable flow. Speeds and maneuverability become more seriously restricted, and the driver experiences a poor level of comfort.	25.1-40.0	100-199
LOS E:	Represents conditions at or near the capacity of the facility. Flow is usually unstable, and freedom to maneuver within the traffic stream becomes extremely difficult.	40.1-60.0	0-99
LOS F:	Describes forced flow or breakdown conditions with queuing along critical approaches. Operating conditions are highly unstable as characterized by erratic vehicle movements along each approach.	60.1 or greater	N/A

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* Source: Transportation Research Board, Highway Capacity Manual, Special Report 209, 1985.

** Delay ranges relate to the mean stopped delay incurred by all vehicles entering the intersection and do not consider the effects of traffic signal coordination. This criteria is intended for use in the evaluation of signalized intersections.

*** Reserve capacity refers to the unused capacity of the minor approach, on a per lane basis. This criteria is limited to use in the evaluation of unsignalized intersections.

SIGNALIZED INTERSECTIONS		1989 EXISTING	
		DELAY SEC.	LOS
1. Park Dr. at Beacon St.		26.17	D
2. Park Dr. at Riverway		8.89	B
3. Fenway at Brookline		40.25	E
4. Park Dr. / Brookline Ave. / Boylston St.		156.74	F
5. Brookline Ave. at Longwood Ave.		397.56	F
6. Riverway at Longwood Ave.		228.80	F
7. Kenmore Square		28.58	D
8. Boylston St. at Park Dr.		1.43	A
9. Fenway at Avenue Louis Pasteur		UNSIG.	E
10. Huntington Ave. at Louis Prang & Ruggles St.		48.76	E
11. Brookline Ave. at Fullerton St.		UNSIG.	A
12. Riverway at Brookline Ave.		872.28	F
13. Park Dr. at Fenway (Boylston St.)		23.24	C
14. BU Bridge at Commonwealth Ave.		825.68	F
15. University Rd. at Commonwealth Ave.		115.05	F
16. Evansway at Fenway and Louis Prang		38.31	D
17. Charlesgate W. at Beacon St.		13.07	B
18. Charlesgate E. at Rte. 1 off ramp		15.66	C
19. Beacon St. at Maitland St. & Mountfort St.		UNSIG.	A
20. Beacon St. at Miner St. & Arundel St.		UNSIG.	A
21. Riverway at Fenway[1]		UNSIG.	C
22. Park Dr. at Avenue Louis Pasteur[1]		UNSIG.	C
23. Park Dr. at Site Entrance		2.49	A
24. Carlton St. at Mountfort St.		1000+	F
25. Boylston St. at Ipswich St.		82.52	F
26. Longwood Ave. at Chapel St.		6.79	B
UNSIGNALIZED INTERSECTIONS		**RC**	**LOS**
9. Fenway at Avenue Louis Pasteur	NB Right	519	A
	WB Left	80	E
11. Brookline Ave. at Fullerton St.	EB Left	889	A
	SB All	536	A
19. Beacon St. at Maitland St. & Mountfort St.	CLV =		A
20. Beacon St. at Miner St. & Arundel St.	CLV =		A
21. Riverway at Fenway	Merge		
22. Park Drive at Avenue Louis Pasteur	Merge		
NO. of INTERSECTIONS at LOS A,B,C,D =			15
NO. of INTERSECTIONS at LOS E,F =			11

Locations 19, 20 LOS determined by critical lane volume analysis.

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TABLE 3-2
AM PEAK HOUR LOS FOR EXISTING

		1989 EXISTING	
	SIGNALIZED INTERSECTIONS	DELAY SEC.	LOS
1.	Park Dr. at Beacon St.	79.44	F
2.	Park Dr. at Riverway	8.09	B
3.	Fenway at Brookline	96.78	F
4.	Park Dr. / Brookline Ave. / Boylston St.	38.34	D
5.	Brookline Ave. at Longwood Ave.	657.52	F
6.	Riverway at Longwood Ave.	1000+	F
7.	Kenmore Square	116.22	F
8.	Boylston St. at Park Dr.	1.79	A
9.	Fenway at Avenue Louis Pasteur	UNSIG.	C
10.	Huntington Ave. at Louis Prang & Ruggles St.	32.20	D
11.	Brookline Ave. at Fullerton St.	UNSIG.	A
12.	Riverway at Brookline Ave.	53.15	E
13.	Park Dr. at Fenway (Boylston St.)	16.00	C
14.	BU Bridge at Commonwealth Ave.	902.19	F
15.	University Rd. at Commonwealth Ave.	60.90	F
16.	Evansway at Fenway and Louis Prang	69.57	F
17.	Charlesgate W. at Beacon St.	14.07	B
18.	Charlesgate E. at Rte. 1 off ramp	18.08	C
19.	Beacon St. at Maitland St. & Mountfort St.	UNSIG.	A
20.	Beacon St. at Miner St. & Arundel St.	UNSIG.	A
21.	Riverway at Fenway'	UNSIG.	C
22.	Park Dr. at Avenue Louis Pasteur'	UNSIG.	C
23.	Park Dr. at Site Entrance	3.83	A
24.	Carlton St. at Mountfort St.	1000+	F
25.	Boylston St. at Ipswich St.	10.07	B
26.	Longwood Ave. at Chapel St.	12.71	B

	UNSIGNALIZED INTERSECTIONS		RC	LOS
9.	Fenway at Avenue Louis Pasteur	NB Right	460	A
		WB Left	220	C
11.	Brookline Ave. at Fullerton St.	EB Left	693	A
		SB All	420	A
19.	Beacon St. at Maitland St. & Mountfort St.	CLV =		A
20.	Beacon St. at Miner St. & Arundel St.	CLV =		A
21.	Riverway at Fenway	Merge		
22.	Park Drive at Avenue Louis Pasteur	Merge		
	NO. of INTERSECTIONS at LOS A,B,C,D =			16
	NO. of INTERSECTIONS at LOS E,F =			10

Locations 19, 20 LOS determined by critical lane volume analysis.

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TABLE 3-3
PM PEAK HOUR LOS FOR EXISTING

The congestion at these locations has been well documented in the previous studies of LMA traffic. The congestion reflects combined demands of those traveling to local activities, those that live in the nearby residential neighborhoods, and those commuting through the area to Kenmore Square and points north (Cambridge) and east (Back Bay and downtown Boston).

Additional congested intersections south of the project site are:

Fenway/Louis Pasteur	LOS E
Fenway/Evansway/Louis Prang	LOS D
Huntington/Louis Prang/Ruggles	LOS E

The congestion at these locations most probably represents a combination of LMA commuting, overflow from both the Brookline Avenue and Huntington Avenue corridors, and travel by Fenway residents.

Three more of the intersections with severe traffic congestion problems lie to the northwest. These are:

BU Bridge at Commonwealth	LOS F
Commonwealth/University	LOS F
Carlton at Mountfort Street	LOS F

The congestion at these locations reflects the conflicts between the heavy east-west demands on Commonwealth Avenue and the north-south movements between Cambridge and Boston. The absence of a connection to Storrow Drive at this location forces all southbound traffic from Cambridge to cross Commonwealth Avenue twice, before merging onto Storrow Drive eastbound.

During the afternoon peak hour one more intersection, Beacon/Park Drive (Audubon Circle), falls to LOS F, and one intersection, Boylston at Ipswich, improves to LOS B.

3.2.4 Traffic during Red Sox Events

A set of supplementary manual turning movement counts was also taken at the following seven intersections during Red Sox evening home games to analyze the cumulative impact of event traffic with commuter traffic adjacent to the site:

1. Park Drive at the Riverway
2. Brookline Avenue at the Fenway
3. Park Drive at Brookline Avenue at Boylston Street
4. Brookline Avenue at Fullerton Street
5. Kenmore Square
6. Brookline Avenue at the Riverway
7. Park Drive at the Fenway (Bowker Overpass)

These manual turning movement counts were taken during the evening peak period on August 3, and August 30, 1989. These counts are also on file at HMM.

A graph of the 15-minute volumes vs. the time of day for average PM peak hour, and PM game day counts is shown in Figure 3-4. This graph shows that the typical weekday PM peak hour for 7 locations is from 4:45 to 5:45 PM. The heaviest 15 minute period was from 5:00 to 5:15 PM, with a total of 5947 vehicles entering these 7 locations. The "PM game day" conditions show the PM peak hour is from 5:30 to 6:30 PM; and the heaviest 15-minute period was from 5:45 to 6:00 p.m., with a total of 5928 vehicles entering these 7 locations. The 15-minute volumes show that during a Red Sox event the typical PM peak is extended, and lasts 90 minutes (5:00 PM to 6:30 PM) but shows no spike or second peak in traffic. The game start time was 7:35 PM, and the traffic counts show a marked decline in 15-minute volumes by 7:00 PM. No further counts were taken beyond 7:00 PM. This pattern is typical for urbanized intersections operating at or near capacity. The event traffic does not show higher peak hour volumes, but the event does create an extended peak hour which can last up to 90 minutes.

The Olmsted Plaza site trips are assumed to coincide with the adjacent peak hour, which is 4:45 to 5:45 PM, with the majority of the trips outbound from the site. The trips to Fenway Park will occur between 5:30 and 7:00 PM, and almost all of these trips will be inbound to the park. Based upon field observations it is likely that the Fenway Park trips will load the Storrow Drive exit ramps to capacity. The Olmsted Plaza site trips will occur earlier in the PM peak, and will not load the same ramps that experience event traffic. It is also noted that the PM game day volumes are the same as the PM typical weekday volumes. For these reasons the impact of Olmsted Plaza off-peak traffic on the surrounding street system have not been further analyzed.

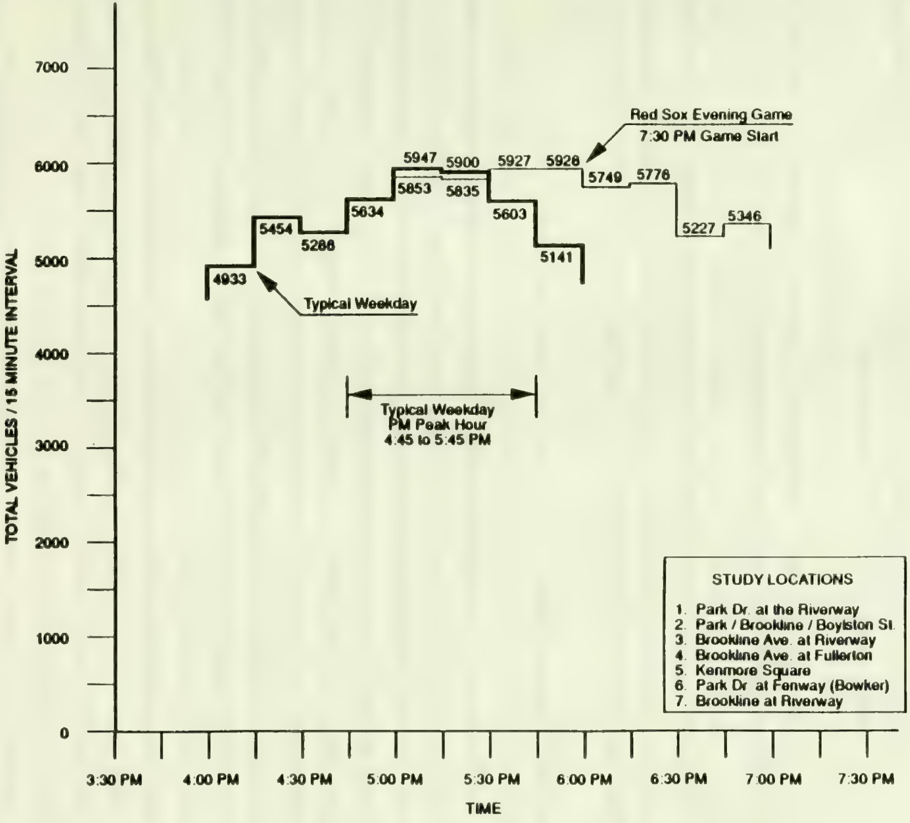

FIGURE 3-4
TOTAL 15 MINUTE VOLUME ENTERING 7 STUDY AREA INTERSECTIONS FOR
TYPICAL WEEKDAY 7 RED SOX EVENING GAME CONDITIONS

3.3 No-Build Conditions

3.3.1 Design Year

The design year studied in this report is 1995. Forecasts of vehicular traffic for this design year take into account traffic due to two sources:

a) "background" traffic growth due to developments located outside the study area but contributing to through traffic volumes: and,

b) Traffic due to "Other Developments" (planned or approved) located within the study area affecting individual intersections.

The combination of both "background" and "other development" traffic with the "Existing" traffic volumes constitutes the No-Build traffic forecast. This is the baseline to compare all future roadway scenarios for Olmsted Plaza.

3.3.2 Background Traffic

The "Background" traffic growth rate due to developments located outside the study area was based upon four data sources. The first source reviewed was the Longwood Medical Area Transportation Study prepared for MASCO by Vanasse Hangen Brustlin, Inc. in November 1987. The LMA study's background traffic growth rate was 0.5%/year. This rate was based upon employment forecasts for Boston, Cambridge, and Brookline.

The second data source reviewed was the Parcel 18 Draft EIR prepared by the Boston Redevelopment Authority in March 1989. The background traffic growth rate used for its traffic analysis was 0.65%/year (3.3% in 5 years). This rate was based upon 1986 and 1988 traffic counts, and a 65% thru-traffic ratio.

The third data source reviewed was the Prudential Center Redevelopment Transportation Access Plan prepared by VHB, Inc. in March 1989. The background traffic growth rate used was 0.50%/year (2.5% in 5 years). This rate is based upon traffic counts, and the Metropolitan Area Planning Council (MAPC) employment projections for Boston.

The fourth data source reviewed was the Longwood Medical Area Transportation Study Tech Memorandum 1 (Figures 15, 16) prepared by VHB, Inc. in November 1987. The AM/PM peak hour manual counts for nine intersections taken in 1987 were compared to the AM/PM peak hour manual counts taken by HMM in 1989. The study area traffic growth from 1987 to 1989 based upon the nine locations was -2.11%/year (-4.27% in 2 years). This drop in traffic growth is most likely due to the closure of the Sears Building in 1988. The study area traffic growth, and the peak hour volumes for each intersection are shown in Table 3-4.

After reviewing the above data sources, traffic engineers for Olmsted Plaza selected a background traffic growth rate of 0.5% per year. This rate was deemed to be reasonable, if slightly conservative. This traffic growth rate is applied to all traffic movements at all 26 study locations.

3.3.3 Other Development Traffic

Table 3-5 lists the proposed development projects that are planned or approved within the study area. The BRA and MEPA[1] requested that each of these be included in our "No-Build" analysis. Traffic conditions in the year 1995 were evaluated with the inclusion of these background "other developments" (i.e., development independent of the proposed project). The trip generation for the "other developments" was obtained from the data sources cited in Section 3.3.2.

The Prudential Center Redevelopment vehicle trips added negligible impact to the study area traffic. This was a result of vehicles accessing major roads near the Prudential center rather than traveling through the study area to gain access to these roads.

The Parcel 18 development added slightly more vehicle trips to the study area intersections, especially toward the southeast sector of the study area at Huntington Avenue.

The Boston University Armory and Arena development will be located northwest of the site. The west side of Commonwealth Avenue will experience the highest traffic impact with negligible impacts to the other study area intersections.

The Longwood Medical Area projects added most to the 1995 No-Build vehicle volumes. In total, these included nine medical developments which distributed vehicle trips throughout the entire study area.

The AM and PM vehicle trip distribution for each of these "other developments" can be seen in Appendix E of the DPIR/DEIR.

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1. MEPA ENF Scoping Certificate dated May 3, 1989.

TABLE 3-4

STUDY AREA TRAFFIC GROWTH (1987 to 1989)

		Peak Hour Volume (VPH)			
	Location	AM[1] 1987	PM[1] 1987	AM 1989	PM 1989
1.	Park Drive at Boylston/Brookline	4065	4445	3847	4232
2.	Brookline Ave. at the Fenway	3745	3440	3689	3345
3.	Longwood Ave. at the Riverway	2940	3020	2556	3334
4.	Brookline Ave. at Longwood Ave.	2485	2660	2421	2479
5.	Fenway at Avenue Louis Pasteur	1770	1940	2053	2239
6.	Huntington Ave. at Ruggles St.	2435	2925	2295	2779
7.	Brookline Ave. at Riverway	3930	4170	3178	3474
8.	Riverway - Fenway Merge	1900	1570	1584	1646
9.	Fenway at Louis Prang St.	1455	1465	1470	1586
	TOTALS	24,725	+ 25,635	23,039	+ 25,114
		= 50,360		= 48,207	

Growth Rate = -4.27%/2 years

= -2.11%/year

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1. Source: Longwood Medical Area Transportation Study, MASCO, Tech Memorandum 1, Figures 15 and 16. Peak hour counts taken from November 1986 to April 1987.

TABLE 3-5

OTHER DEVELOPMENTS PLANNED OR APPROVED WITHIN THE STUDY AREA

Map No.	Development Name	Proposed Land Use(s)	Expected Completion Year
1	Prudential Center Redevelopments	1,000,000 SF Office 270,000 SF Retail 300 Housing Units	1994
2	Parcel 18	771,700 SF Office 51,180 SF Retail 150 Residential Units 90,600 SF Cultural Center	1993
3	Boston University Armory and Arena	Auditorium 1200-Bed Student Housing 24 Faculty/Staff Housing Units 43,000 SF Retail 627 Parking Spaces	1991
4	Beth Israel Hospital - Emmanuel Science Building Research West	84,000 SF Research 16,000 SF Inpatient 8,000 SF Outpatient Medical Office	1994
5	Brigham and Womens Hospital	115,000 SF Research	1994
6	Children's Hospital Medical Center	142,000 SF Research	1994
7	Harvard Medical School	209,000 SF East Quad Research Facility 150 Parking Spaces Garage	1994
8	Joslin Diabetes Clinic	60,000 SF Research	1994
9	Massachusetts College of Pharmacy and Allied Health Sciences	65,000 SF Dormitory (308 Beds) 60,000 SF of Classroom	1994
10	New England Deaconess	30,000 SF Outpatient Medical Office	1994
11	MASCO Mixed Use Development	25,000 SF Research 25,000 SF Office 20,000 SF Retail 7,000 SF Child Care 525 Parking Spaces	1994
12	Beth Israel Hospital Children's Hospital	200 Parking Spaces	1994
13	Massachusetts College of Art	99,000 SF Existing Parcel (Future land use is uncertain at this time. No ENF/PNF filed as of 8-15-89.)	Post-1996

The last development in the study area, mentioned on Table 3-5, is the Massachusetts College of Art. No vehicle trips from this development were included in the 1995 No-Build volumes. The Dept. of Capital Planning Organization (DCPO) noted that they have not secured a design consultant, nor have they submitted an ENF/PNF for this parcel. The expected project completion is post 1996, therefore it was not included in our 1995 No-Build traffic forecasts.

The combined "other development" trips were distributed throughout the study area roadway network in order to evaluate the 1995 No-Build traffic impacts. The vehicle trips from the 12 developments were extended as through traffic entering and exiting the major roads near the site. The inclusion of the 0.50% growth rate with these "other" development vehicle trips results in the 1995 No-Build traffic volumes. The 1995 AM and PM No-Build traffic volumes are shown on Figures 3-5 and 3-6.

3.3.4 No-Build Levels of Service

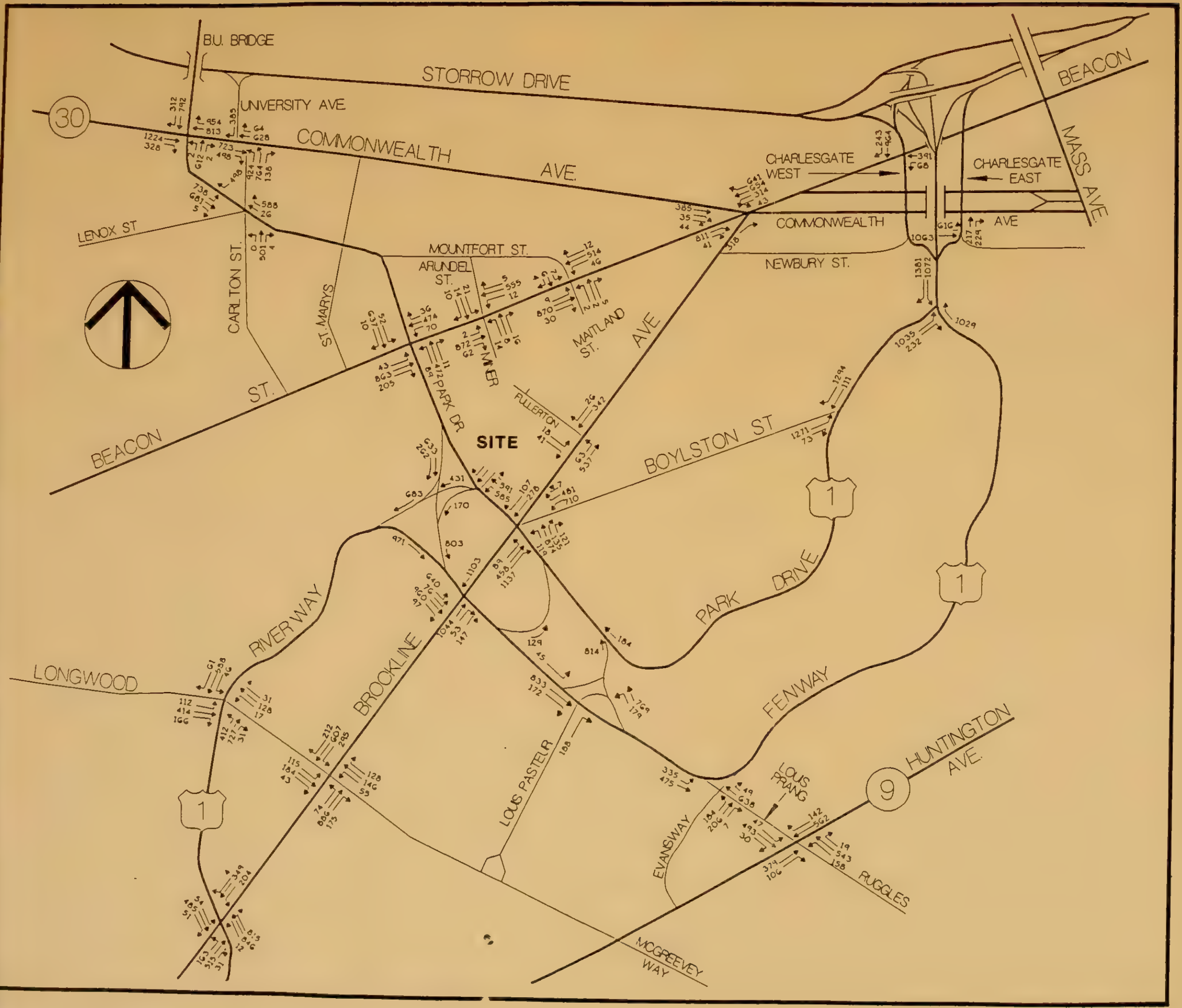
Using the AM/PM traffic volumes an analysis of peak hour traffic operations for 1995 conditions, without the Olmsted Plaza development, was conducted. The results of this analysis are presented in Tables 3-6 and 3-7.

During the 1995 No-Build AM peak hour, 14 locations operate at LOS A through D, and 12 operate at LOS E and F. During the PM peak hour, 14 locations operate at LOS A through D, and 12 operate at LOS E and F.

This represents relatively modest increases in traffic congestion from the existing case. In the AM peak hour Evans Way at Fenway and Louis Prang falls from LOS D to LOS E. The decline is due to additional LMA and Parcel 18 traffic on the Fenway and Louis Prang Street.

No other intersections fall from LOS A-D into the LOS E or F range (although a total of four intersections fall by one LOS rating level.)

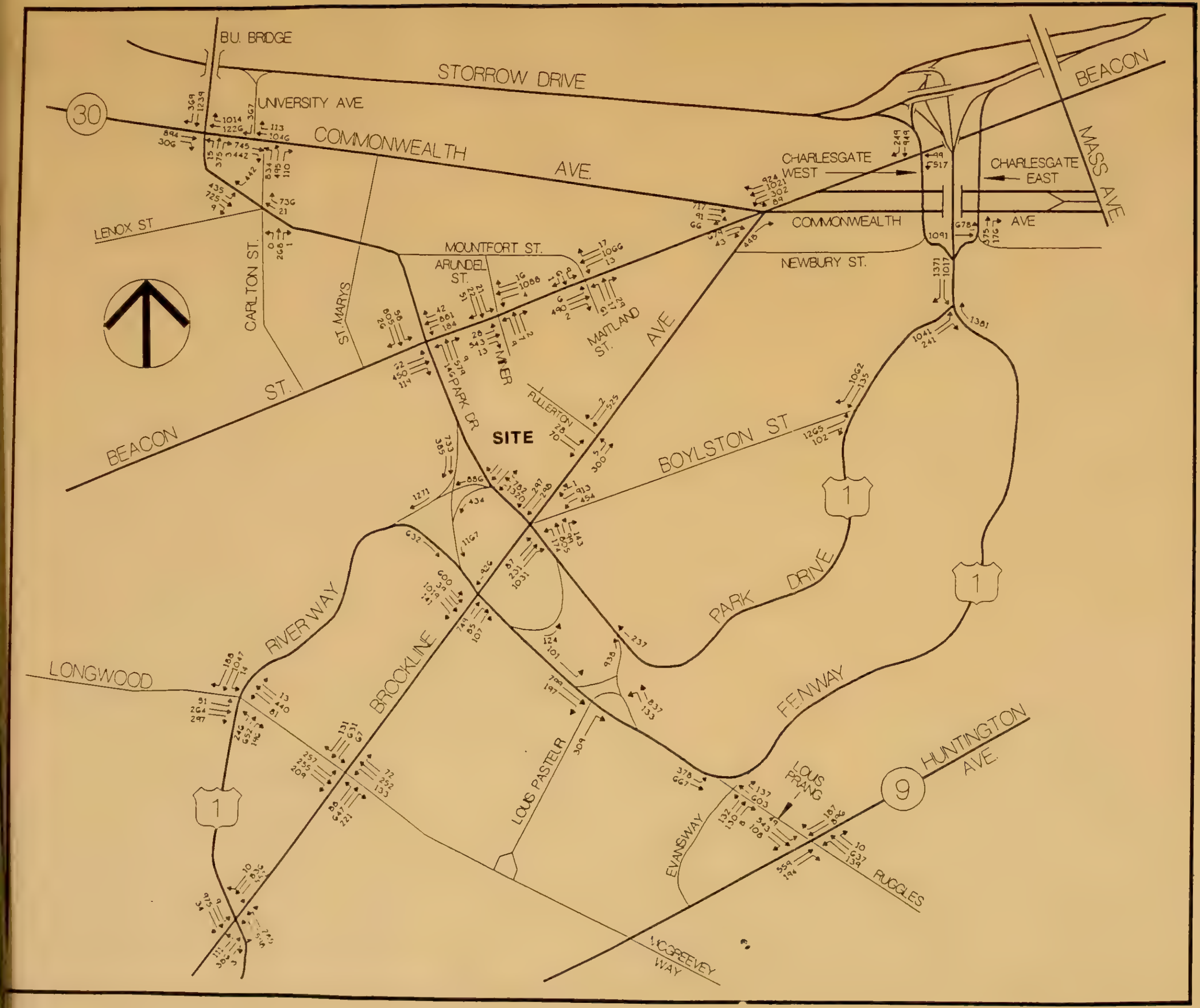
In the PM peak hour five intersections drop by one LOS rating level, but, once again only one intersection drops from a LOS A-D to an LOS E-F rating. That is the major intersection at Park Drive/Brookline Ave/Boylston Street. The decline in LOS is due to additional traffic on Boylston and Park Drive.



OLMSTED PLAZA

AM 1995 NO BUILD TRAFFIC VOLUMES

FIGURE 3-5



OLMSTED PLAZA

PM 1995 NO BUILD
TRAFFIC VOLUMES

FIGURE 3-6

SIGNALIZED INTERSECTIONS	1989 EXISTING DELAY SEC.	1989 EXISTING LOS	1995 NO-BUILD DELAY SEC.	1995 NO-BUILD LOS
1. Park Dr. at Beacon St.	26.17	D	28.83	D
2. Park Dr. at Riverway	8.89	B	8.96	B
3. Fenway at Brookline	40.25	E	86.37	F
4. Park Dr. / Brookline Ave. / Boylston St.	156.74	F	245.73	F
5. Brookline Ave. at Longwood Ave.	397.56	F	1000+	F
6. Riverway at Longwood Ave.	228.80	F	1000+	F
7. Kenmore Square	28.58	D	33.24	D
8. Boylston St. at Park Dr.	1.43	A	1.49	A
9. Fenway at Avenue Louis Pasteur	UNSIG.	E	UNSIG.	E
10. Huntington Ave. at Louis Prang & Ruggles St.	48.76	E	1000+	F
11. Brookline Ave. at Fullerton St.	UNSIG.	A	UNSIG.	A
12. Riverway at Brookline Ave.	872.28	F	1000+	F
13. Park Dr. at Fenway (Boylston St.)	23.24	C	35.47	D
14. BU Bridge at Commonwealth Ave.	825.68	F	920.83	F
15. University Rd. at Commonwealth Ave.	115.05	F	135.57	F
16. Evansway at Fenway and Louis Prang	38.31	D	55.42	E
17. Charlesgate W. at Beacon St.	13.07	B	14.27	B
18. Charlesgate E. at Rte. 1 off ramp	15.66	C	16.76	C
19. Beacon St. at Maitland St. & Mountfort St.	UNSIG.	A	UNSIG.	A
20. Beacon St. at Miner St. & Arundel St.	UNSIG.	A	UNSIG.	A
21. Riverway at Fenway[1]	UNSIG.	C	UNSIG.	C
22. Park Dr. at Avenue Louis Pasteur[1]	UNSIG.	C	UNSIG.	C
23. Park Dr. at Site Entrance	2.49	A	2.52	A
24. Carlton St. at Mountfort St.	1000+	F	1000+	F
25. Boylston St. at Ipswich St.	82.52	F	1000+	F
26. Longwood Ave. at Chapel St.	6.79	B	7.03	B

UNSIGNALIZED INTERSECTIONS		1989 EXISTING RC	1989 EXISTING LOS	1995 NO-BUILD RC	1995 NO-BUILD LOS
9. Fenway at Avenue Louis Pasteur	NB Right	519	A	467	A
	WB Left	80	E	50	E
11. Brookline Ave. at Fullerton St.	EB Left	889	A	841	A
	SB All	536	A	468	A
19. Beacon St. at Maitland St. & Mountfort St.	CLV =		A	565	A
20. Beacon St. at Miner St. & Arundel St.	CLV =		A	586	A
21. Riverway at Fenway	Merge				
22. Park Drive at Avenue Louis Pasteur	Merge				
NO. of INTERSECTIONS at LOS A,B,C,D =			15		14
NO. of INTERSECTIONS at LOS E,F =			11		12

Locations 19, 20 LOS determined by critical lane volume analysis.

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TABLE 3-6
AM PEAK HOUR LOS FOR EXISTING, NO-BUILD

		1989 EXISTING		1995 NO-BUILD	
SIGNALIZED INTERSECTIONS		**DELAY SEC.**	**LOS**	**DELAY SEC.**	**LOS**
1. Park Dr. at Beacon St.		79.44	F	108.73	F
2. Park Dr. at Riverway		8.09	B	10.26	B
3. Fenway at Brookline		96.78	F	148.60	F
4. Park Dr. / Brookline Ave. / Boylston St.		38.34	D	52.00	E
5. Brookline Ave. at Longwood Ave.		657.52	F	1000+	F
6. Riverway at Longwood Ave.		1000+	F	1000+	F
7. Kenmore Square		116.22	F	140.11	F
8. Boylston St. at Park Dr.		1.79	A	1.92	A
9. Fenway at Avenue Louis Pasteur		UNSIG.	C	UNSIG.	D
10. Huntington Ave. at Louis Prang & Ruggles St.		32.20	D	531.89	F
11. Brookline Ave. at Fullerton St.		UNSIG.	A	UNSIG.	B
12. Riverway at Brookline Ave.		53.15	E	104.40	F
13. Park Dr. at Fenway (Boylston St.)		16.00	C	33.76	D
14. BU Bridge at Commonwealth Ave.		902.19	F	1000+	F
15. University Rd. at Commonwealth Ave.		60.90	F	68.19	F
16. Evansway at Fenway and Louis Prang		69.57	F	104.17	F
17. Charlesgate W. at Beacon St.		14.07	B	17.45	C
18. Charlesgate E. at Rte. 1 off ramp		18.08	C	20.11	C
19. Beacon St. at Maitland St. & Mountfort St.		UNSIG.	A	UNSIG.	A
20. Beacon St. at Miner St. & Arundel St.		UNSIG.	A	UNSIG.	A
21. Riverway at Fenway[1]		UNSIG.	C	UNSIG.	C
22. Park Dr. at Avenue Louis Pasteur[1]		UNSIG.	C	UNSIG.	C
23. Park Dr. at Site Entrance		3.83	A	3.97	A
24. Carlton St. at Mountfort St.		1000+	F	1000+	F
25. Boylston St. at Ipswich St.		10.07	B	11.51	B
26. Longwood Ave. at Chapel St.		12.71	B	14.74	B
UNSIGNALIZED INTERSECTIONS		**RC**	**LOS**	**RC**	**LOS**
9. Fenway at Avenue Louis Pasteur	NB Right	460	A	424	A
	WB Left	220	C	171	D
11. Brookline Ave. at Fullerton St.	EB Left	693	A	663	A
	SB All	420	A	376	B
19. Beacon St. at Maitland St. & Mountfort St.	CLV =		A	722	A
20. Beacon St. at Miner St. & Arundel St.	CLV =		A	741	A
21. Riverway at Fenway	Merge				
22. Park Drive at Avenue Louis Pasteur	Merge				
NO. of INTERSECTIONS at LOS A,B,C,D =			16		14
NO. of INTERSECTIONS at LOS E,F =			10		12

Locations 19, 20 LOS determined by critical lane volume analysis.

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TABLE 3-7
PM PEAK HOUR LOS FOR EXISTING, NO-BUILD

3.4 Olmsted Plaza Project Traffic

3.4.1 Project Trip Generation

The DPIR/DEIR contains a detailed description of the process followed to estimate project-related trip generation. There have been no changes made to those original calculations. The AM and PM peak hour person trips, vehicle trips, automobile occupancy factors, and the travel mode splits remain identical to those reported in the DPIR/DEIR. The following pair of tables are taken directly from the earlier report. Table 3-8 presents the weekday AM and PM peak hour person trips and vehicle trips for the project, and Table 3-9 provides a parallel set of trip generation numbers for a Saturday case. The former is based upon the project design concept which includes an office building as the Brookline Avenue component of the project. As noted earlier in this report this is the current configuration of the project. In the latter case the weekend trip generation table is based upon the assumption that a hotel, rather than the office building, is constructed at Brookline Avenue. While this option is no longer likely it was used for the weekend case because a hotel scenario generates more traffic on the weekend, therefore, this is a conservative assumption from a traffic generation standpoint.

A	B	C				D				E	F	G			
DEVELO-PMENT	AREA (S.F.)	PEAK HOUR PERSON TRIP RATE				PEAK HOUR PERSON TRIP				AUTO MODE SPLIT	PHOUR AUTO OCCU.	PHOUR (ALL MODES) VEHICLE TRIPS			
		AM IN	AM OUT	PM IN	PM OUT	AM IN	AM OUT	PM IN	PM OUT			AM IN	AM OUT	PM IN	PM OUT
SEARS BUILDING															
B-HEALTH CLUB	31,708														
	EMP.	0.2	0	0.1	0.1	6	0	3	3	56%	1.3	3	0	1	1
	OTHER	1.65	0.45	1	1.5	52	14	32	48	20%	1.6	7	2	4	6
1-RETAIL	60,880														
	EMP.	0.3	0.1	0.3	0.6	18	6	18	37	25%	1.3	4	1	4	7
	OTHER	0	0.1	0.8	1.6	0	6	49	97	20%	1.6	0	1	6	12
2-8 OFFICE	168,687														
	EMP.	1.7	0.02	0.25	1.5	287	3	42	253	56%	1.3	124	1	18	109
	OTHER	0.05	0.24	0.05	0.06	8	40	8	10	56%	1.6	3	14	3	4
2-8 R & D	523,817														
	EMP.	1.2	0	0.04	1	629	0	21	524	56%	1.3	271	0	9	226
	OTHER	0.1	0.14	0.15	0.07	52	73	79	37	56%	1.6	18	26	28	13
2-CLINICAL MED. OFFICE	158,540														
	EMP.	0.5	0.1	0.1	1.5	79	16	16	238	56%	1.3	34	7	7	102
	OTHER	0.1	0.1	0.7	1.1	16	16	111	174	30%	1.6	3	3	21	33
PARK DRIVE OFFICE	227,000														
	EMP.	1.7	0.02	0.25	1.5	386	5	57	341	56%	1.3	166	2	24	147
	OTHER	0.05	0.24	0.05	0.06	11	54	11	14	56%	1.6	4	19	4	5
BROOKLINE AVE. OFFICE (OPTIONAL)	309,000														
	EMP.	1.7	0.02	0.25	1.5	525	6	77	464	56%	1.3	226	3	33	200
	OTHER	0.05	0.24	0.05	0.06	15	74	15	19	56%	1.6	5	26	5	6
BROOKLINE AVE. HOTEL	0 ROOMS														
	EMP.	0.1	0	0	0.03	0	0	0	0	25%	1.3	0	0	0	0
		0.47	0.29	0.46	0.36	0	0	0	0	80%	1.6	0	0	0	0
DAY CARE	10,147														
	EMP.	0.4	0	0	0.4	4	0	0	4	56%	1.3	2	0	0	2
	OTHER	6.1	4.85	5.2	5.4	62	49	53	55	56%	1.6	22	17	18	19
TOTALS						1696.3	290.63	489.4	1910.7			711.3	98.87	152	732.4

TABLE 3-8
TRIP GENERATION TABLE
OPTION A WITH BROOKLINE AVENUE OFFICE BUILDING

A	B	C				D				E	F	G			
DEVELOPMENT	AREA (S.F.)	DAILY PEAK HOUR PERSON TRIP RATE				PEAK HOUR PERSON TRIP				AUTO MODE SPLIT	PHOUR AUTO OCCU.	PHOUR (ALL MODES) VEHICLE TRIPS			
		AM IN	AM OUT	PM IN	PM OUT	AM IN	AM OUT	PM IN	PM OUT			AM IN	AM OUT	PM IN	PM OUT
SEARS BUILDING															
B-HEALTH CLUB	31,708														
	EMP.	0.2	0	0.1	0.1	6	0	3	3	56%	1.3	3	0	1	1
	OTHER	0.8	0.2	0.5	0.75	25	6	16	24	20%	1.6	3	1	2	3
1-RETAIL	60,880														
	EMP.	0.2	0.2	0.2	0.2	12	12	12	12	25%	1.3	2	2	2	2
	OTHER	5.3	5.3	5.3	5.3	323	323	323	323	20%	1.6	40	40	40	40
2-8 OFFICE	168,687														
	EMP.	0.116	0.116	0.116	0.116	20	20	20	20	56%	1.3	8	8	8	8
	OTHER	0	0	0	0	0	0	0	0	56%	1.6	0	0	0	0
2-8 R & D	523,817														
	EMP.	0.115	0.115	0.115	0.115	60	60	60	60	56%	1.3	26	26	26	26
	OTHER	0	0	0	0	0	0	0	0	56%	1.6	0	0	0	0
2-CLINICAL MED. OFFICE	158,540														
	EMP.	0.25	0.05	0.05	0.75	40	8	8	119	56%	1.3	17	3	3	51
	OTHER	0.05	0.05	0.35	0.55	8	8	55	87	30%	1.6	1	1	10	16
PARK DRIVE OFFICE	227,000														
	EMP.	0.116	0.116	0.116	0.116	26	26	26	26	56%	1.3	11	11	11	11
	OTHER	0	0	0	0	0	0	0	0	56%	1.6	0	0	0	0
BROOKLINE AVE. OFFICE (OPTIONAL)	0														
	EMP.	0.116	0.116	0.116	0.116	0	0	0	0	56%	1.3	0	0	0	0
	OTHER	0	0	0	0	0	0	0	0	56%	1.6	0	0	0	0
BROOKLINE AVE. HOTEL	300	ROOMS													
	EMP.	0.03	0.03	0.03	0.03	9	9	9	9	25%	1.3	2	2	2	2
		0.22	0.22	0.22	0.22	66	66	66	66	80%	1.6	33	33	33	33
DAY CARE	10,147														
	EMP.	0	0	0	0	0	0	0	0	56%	1.3	0	0	0	0
	OTHER	0	0	0	0	0	0	0	0	56%	1.6	0	0	0	0
TOTALS						595	538	598	749			148	129	140	195

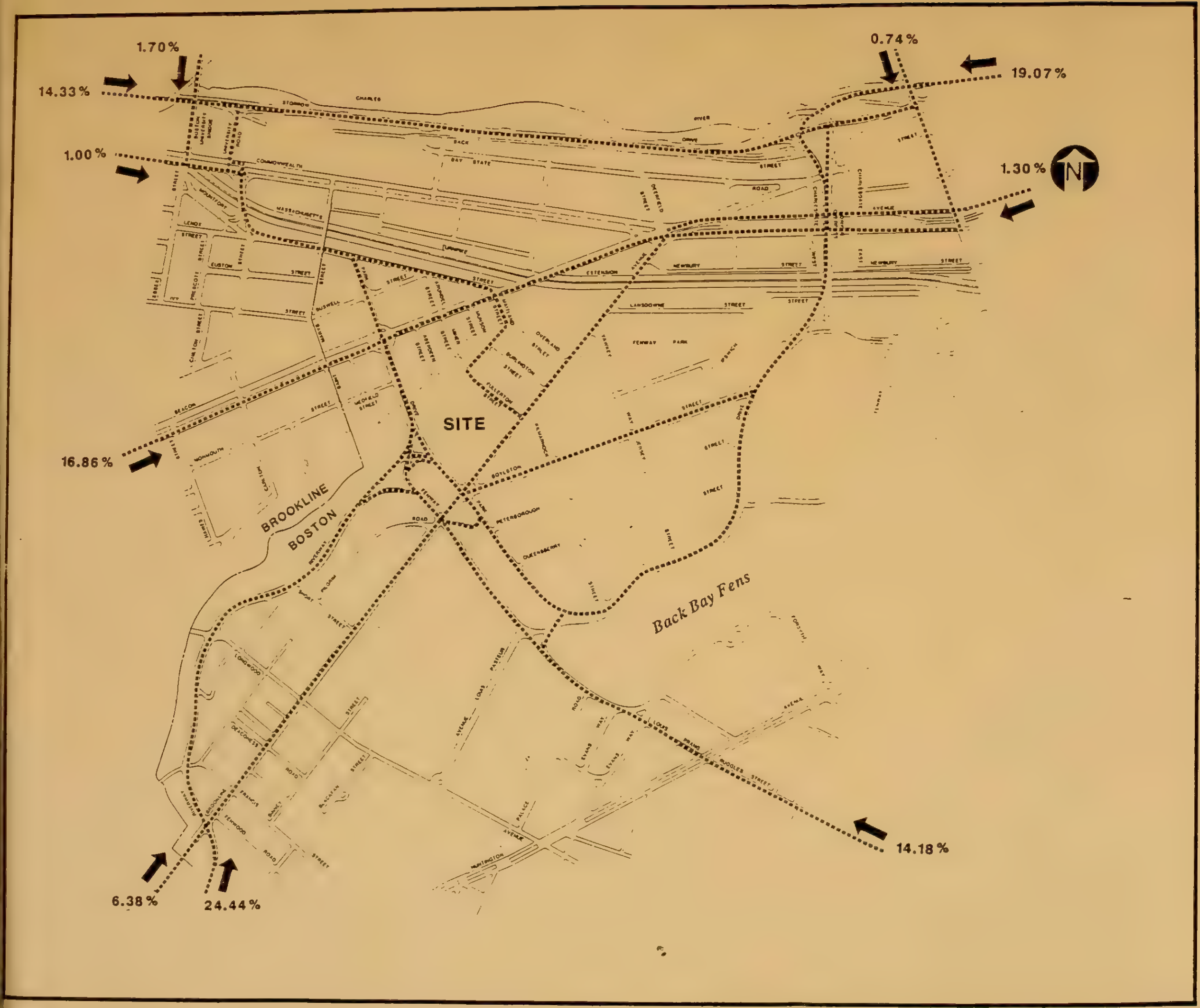
TABLE 3-9
SATURDAY TRIP GENERATION TABLE
OPTION B- WITH BROOKLINE AVENUE HOTEL

3.4.2 Vehicle Trip Distribution

The vehicle trip distribution also remains unchanged from the distribution shown in the DPIR/DEIR. The source of the trip distributions was the Medical Area Service Corporations (MASCO) employee home zip code listing for 23,000 employees working within the LMA. The traffic engineers collected, from the Boston Redevelopment Authority, a zip code map showing the geographic limits of each zip code boundary. The home zip codes, which represent over 400 zip codes within Massachusetts, Rhode Island, New Hampshire, and Maine were assigned the exact employee percentages computed by MASCO. Ten trip origin/destination zones were then placed on a map and the home base zip code data was shown at each entering point. The directional distributions from these travel zones are as follows:

Travel Zones	Vehicle Trip Percentage
From the Mass Pike-Allston Brighton Tolls-Storrow Dr.	14.33%
From the B.U. Bridge	1.70
From the Harvard Bridge	0.70
From I-93 and Storrow Drive	19.07
From Downtown Boston via Commonwealth Ave.	1.30
From Melnia Cass Blvd-Ruggles St.	14.18
From the Riverway south of Brookline Ave	24.44
From Brookline Ave and Huntington Ave.	6.38
From Brookline via Beacon St.	16.86
From Brookline via Commonwealth Ave.	1.00
Total =	100.00%

To assign the above distribution to the actual street network serving the project, the project team has made several judgments on what fractions of traffic would use the various access routes based upon AM and PM travel time runs, along with one-way, and turning lane restrictions. It should be noted that in the trip distribution process, vehicles traveling eastbound on Storrow Drive can exit onto University Road, Charlesgate West or the Bowker Overpass. For the reverse direction traffic must enter Storrow Drive from either Charlesgate East or the Bowker Overpass. The resultant vehicle trip distributions are shown on Figure 3-7.



OLMSTED PLAZA

VEHICLE TRIP DISTRIBUTION

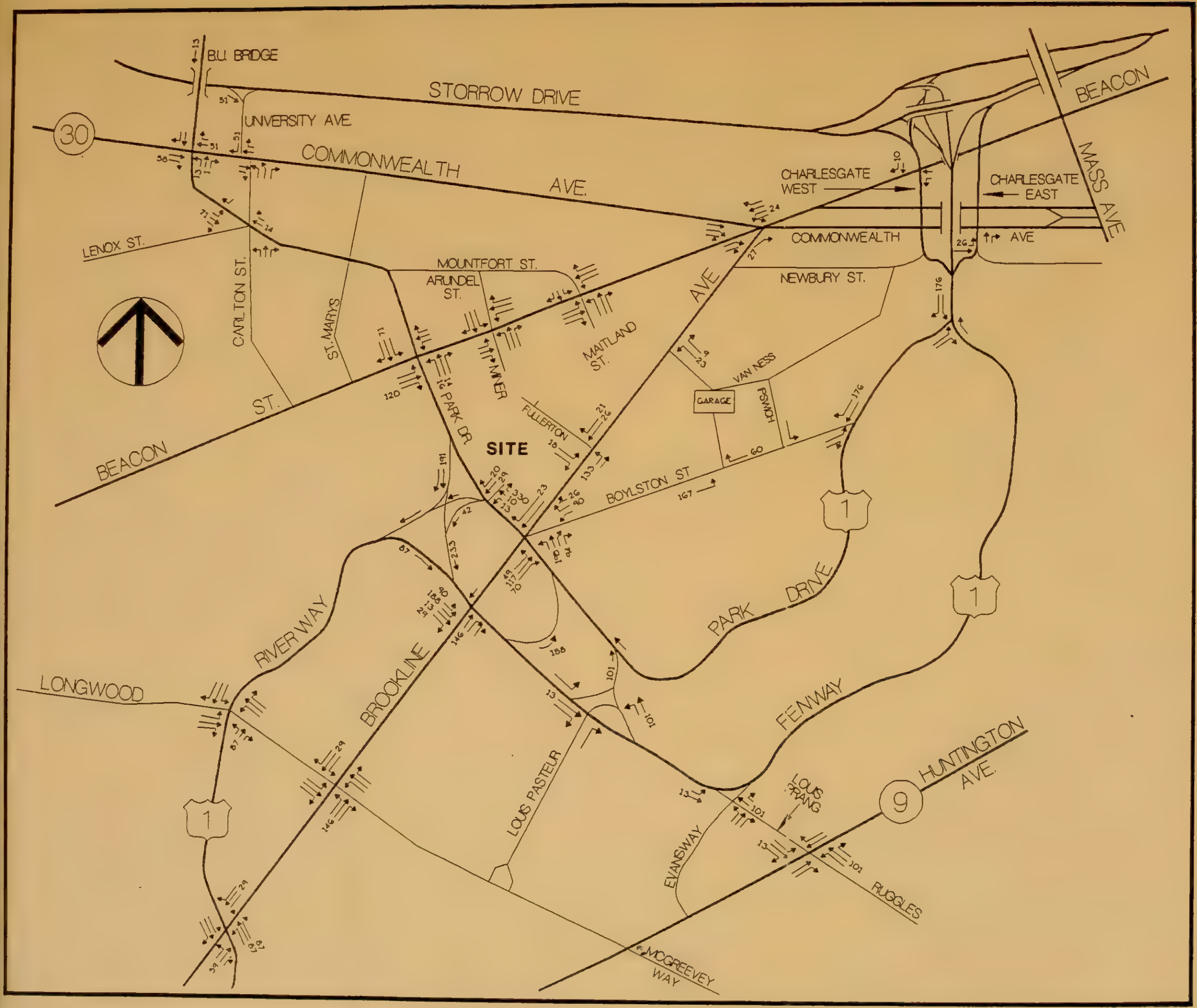
FIGURE 3-7

3.4.3 Revised Traffic Network Scenarios

Since the completion of the DPIR/DEIR three sets of revisions to the original traffic analysis have been initiated. First the traffic engineers reviewed the basic circulation system studied in the DPIR/DEIR. That system included studies of both the existing street system, and the existing street system modified by the addition of the "Maitland Street Connector". The Maitland Street Connector was a design that provided the project with a "back door" route across the Green Line right of way to a connection with Beacon Street via Maitland Street. This connector was originally devised as a means for diverting traffic flow from the heavily travelled intersections on Brookline Avenue. The traffic engineers felt that an alternate route might well result in significant reductions in congestion at other locations. Accordingly a preliminary design for the diversion route, including a grade separated crossing of the Green Line, was devised and tested during the compilation of the DPIR/DEIR. Much to the surprise of the traffic engineers the fairly expensive improvement resulted in only marginal improvements to traffic flow at a few intersections, without really solving the major problems of the Brookline Avenue/Riverway corridor. From a cost/benefit standpoint the connector was deemed unjustifiable. As a result it has been dropped from further consideration in the FPIR/FEIR. The funds that would have been required to implement the connector have been reserved, instead, for more productive mitigation elsewhere in the network.

Second the split parking concept, as described previously in Section 2.1 of the report has been adopted. This concept provides for a smaller main garage on the Sears site, with a satellite garage to accommodate commuting employees on the Van Ness Street parcel being sold by Sears as part of the land sale package. The split parking concept has dispersed traffic from intersections immediately adjacent to the project site, while having very little effect on LOS at the intersections at a greater distance from the site. The resulting traffic flows for both the AM and PM site trips are shown in Figures 3-8 and 3-9.

Third, a new set of circulation systems has been developed as a result of reviewing the four circulation scenarios presented and analyzed in the DPIR/DEIR. For each of four new circulation systems revised LOS analysis has been undertaken. The four new scenarios are described below:



OLMSTED PLAZA

AM 1995
OLMSTED SITE TRAFFIC ONLY

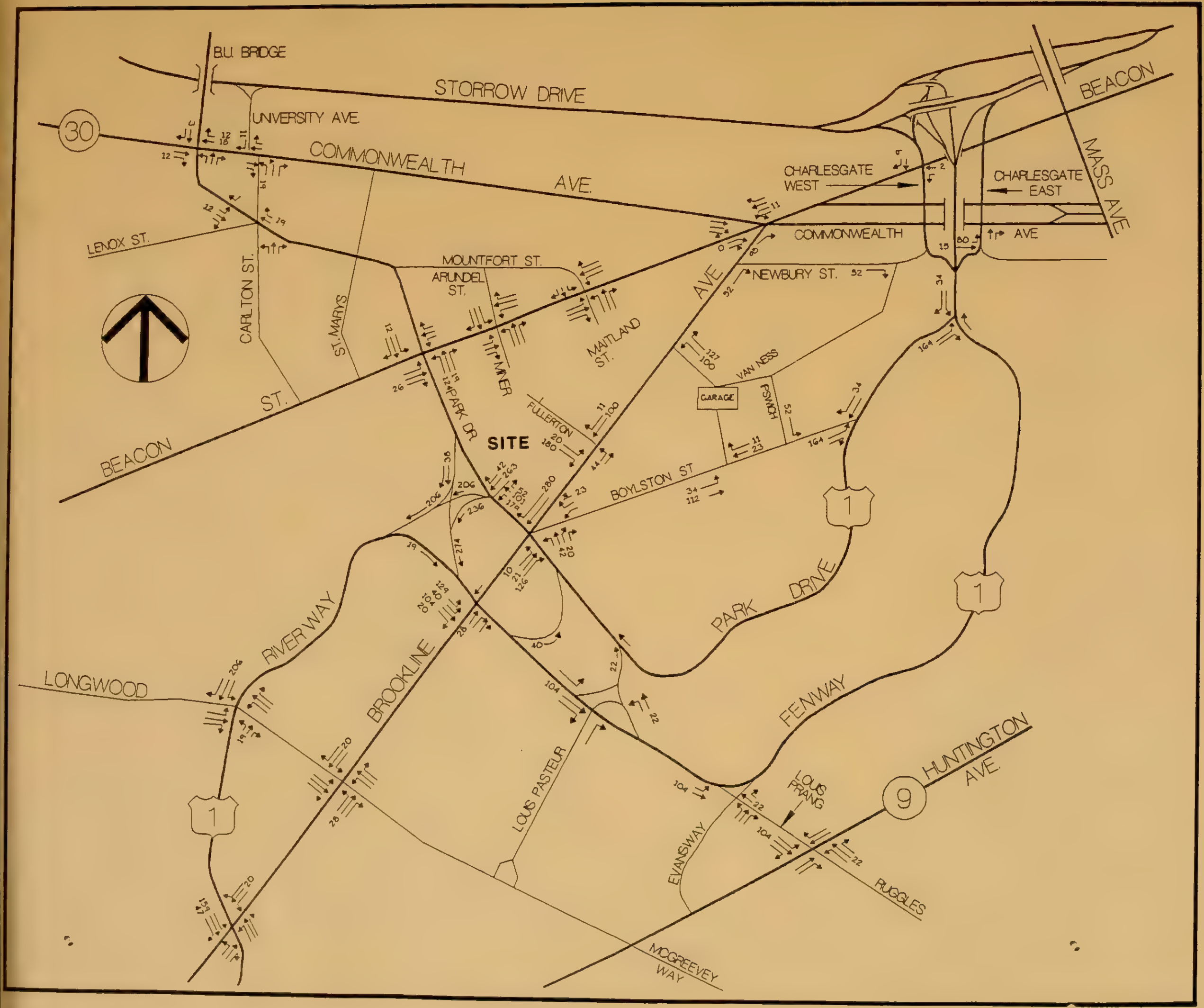
FIGURE 3-8

hm

OLMSTED PLAZA

PM 1995
OLMSTED SITE TRAFFIC ONLY

FIGURE 3-9



1. 1995 Build, No Mitigation - This network assumes that no roadway widenings or signal equipment modifications have been made by 1995, and all project traffic and other No-Build traffic is assigned to the current roadway network. This scenario includes the assumption that the access driveway that connects the Olmsted site to the Harvard Community Health Plan Building will be closed to vehicular traffic. This closure will prohibit vehicles from using the Miner Street Bridge which is a private way.

2. 1995 Build, With Brookline Avenue 5-Lane Section With Isolated Intersection Mitigations - This scenario is shown on Figure 3-10. It assumes that approximately 118 on-street parking spaces are removed from Brookline Avenue, and a 5-lane section is implemented between the Fenway to the Riverway intersections. This scenario requires removal of parking meters, increased police enforcement, increased towing services, and signal equipment modifications. This scenario also includes suggested improvements to isolated intersections other than those along Brookline Avenue, to improve the peak hour levels of service. They are fully described in the following sections.

3. 1995 Build, With Brookline Avenue 5-Lane Section With Pure Rotary, With Isolated Intersection Mitigations - This scenario is shown on Figure 3-11. It assumes that Brookline Avenue is modified to a 5-lane section, and the Sears Circle's traffic flows are modified so that they operate in a counterclockwise fashion. The traffic engineers propose geometric changes to provide an additional lane on the west portion of the circle, and also closure of the existing 2-lane U-turn ramp at the eastern end of the circle. The median on Brookline Avenue would be removed to allow for one-way northbound traffic flow. The Park Drive-Riverway merge area would be signalized to provide better traffic control and a signal controlled pedestrian crosswalk. With this design, the five signals within the rotary are interconnected, and operate on a fixed time basis. This type of operation will process the heavier flows in a progressive fashion. It will also provide for concurrent and exclusive pedestrian phases that will not interrupt the vehicle progressions. Isolated intersection improvements outside this area are also provided in this scenario.

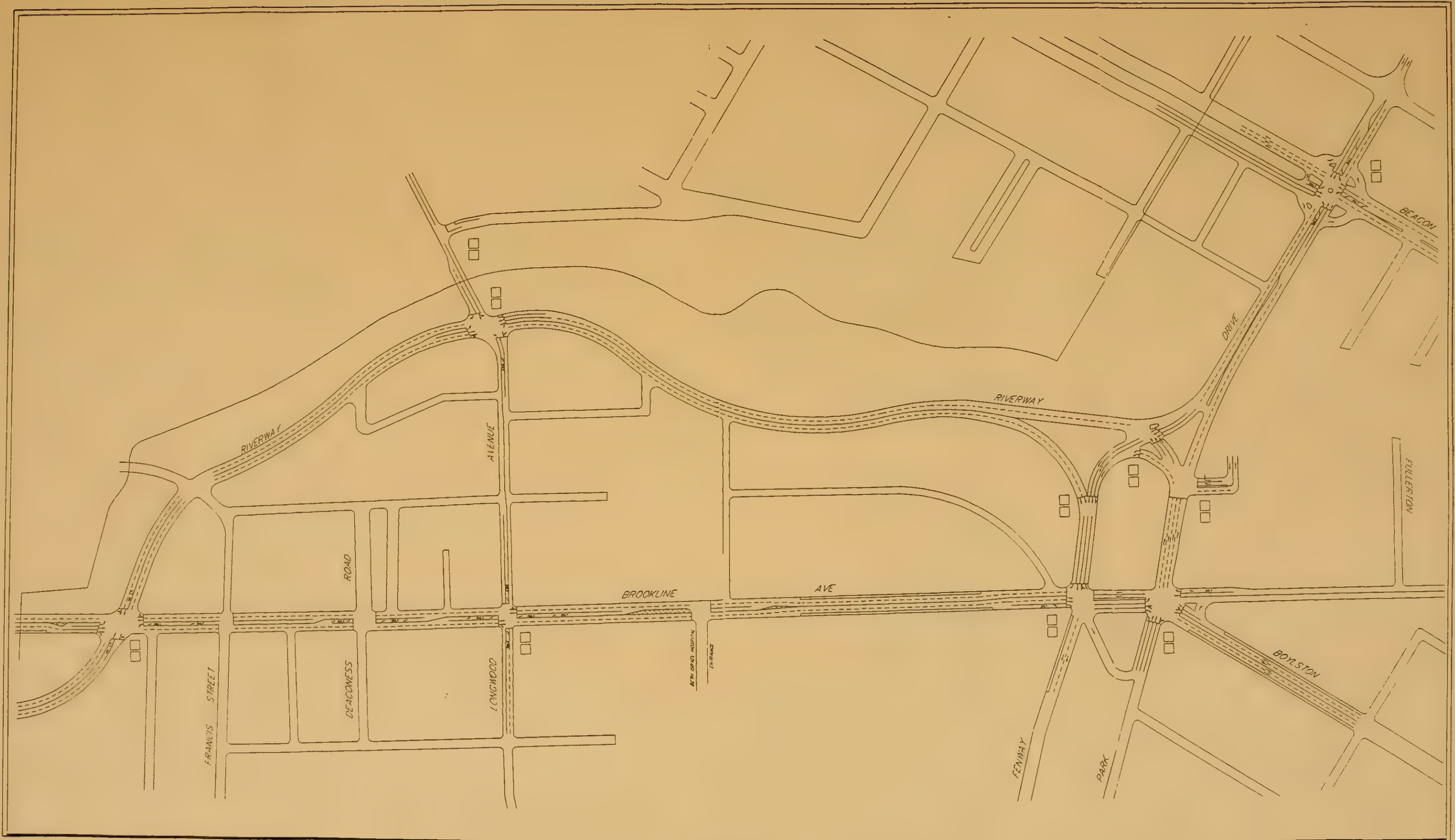


FIGURE 3-10
1995 BUILD WITH MITIGATION

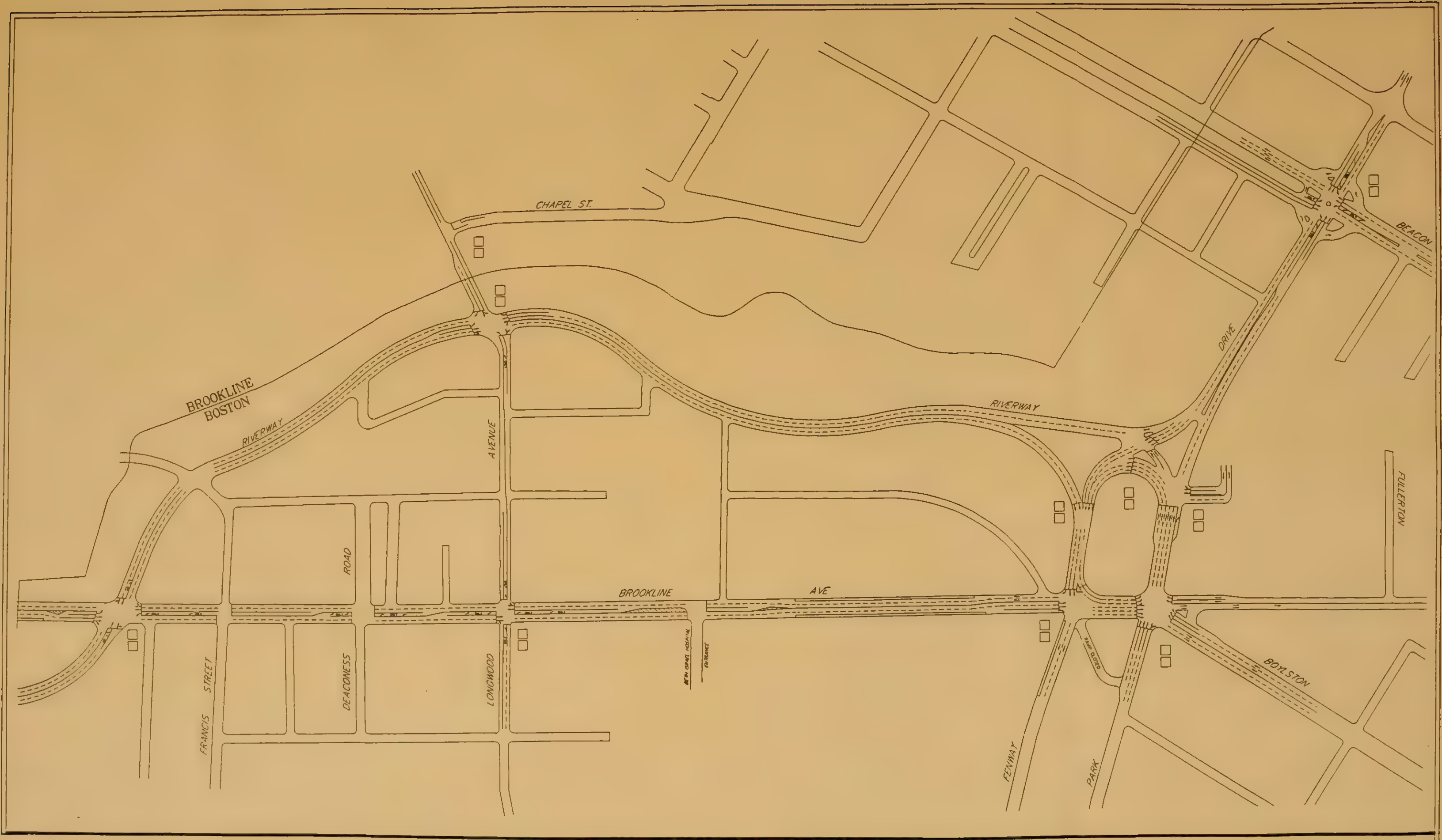


FIGURE 3-11
1995 BUILD WITH MITIGATION AND PURE ROTARY

4. 1995 Build, With Pure Rotary, U.S. Short Couplet, and Isolated Intersection Mitigations - This scenario, as shown on Figure 3-12, calls for traffic flow pattern changes from the Sears Circle to the Riverway-Brookline intersection. This scenario calls for the Riverway to be 3 to 4 lanes southbound from the Sears Circle to Brookline Avenue. The Riverway section, from Short Street to the Fenway has a northbound frontage road for residential parking. The frontage road will provide parking for Pilgrim Road residents, and the one-way design will discourage any cut-through traffic during peak periods. The Brookline Avenue section is 4 lanes northbound, with one truck-bus contraflow lane southbound, with no parking on either side of Brookline Avenue.

3.4.4 LOS for Each Scenario

For each of the four circulation modification scenarios the traffic engineers reassigned peak hour traffic volumes and recalculated LOS values. The recalculated LOS values for each of the modified traffic flow scenarios are outlined and compared to the 1995 No-Build LOS in Tables 3-10 and 3-11. The former provides LOS for the AM peak period, the latter provides LOS for the PM peak period.

Scenario 1: 1995 Build, No Mitigation

This scenario was analyzed to show the incremental increases of site traffic on the No-Build condition. This comparison shows that during the AM peak hour, 5 intersections have reductions in LOS. Two of the locations will fall into the LOS E-F range. During the PM peak hour, 5 locations will have reduced LOS, and one location will fall into the LOS E-F range. This scenario was studied for comparison purposes only. It is not considered a viable Build option.

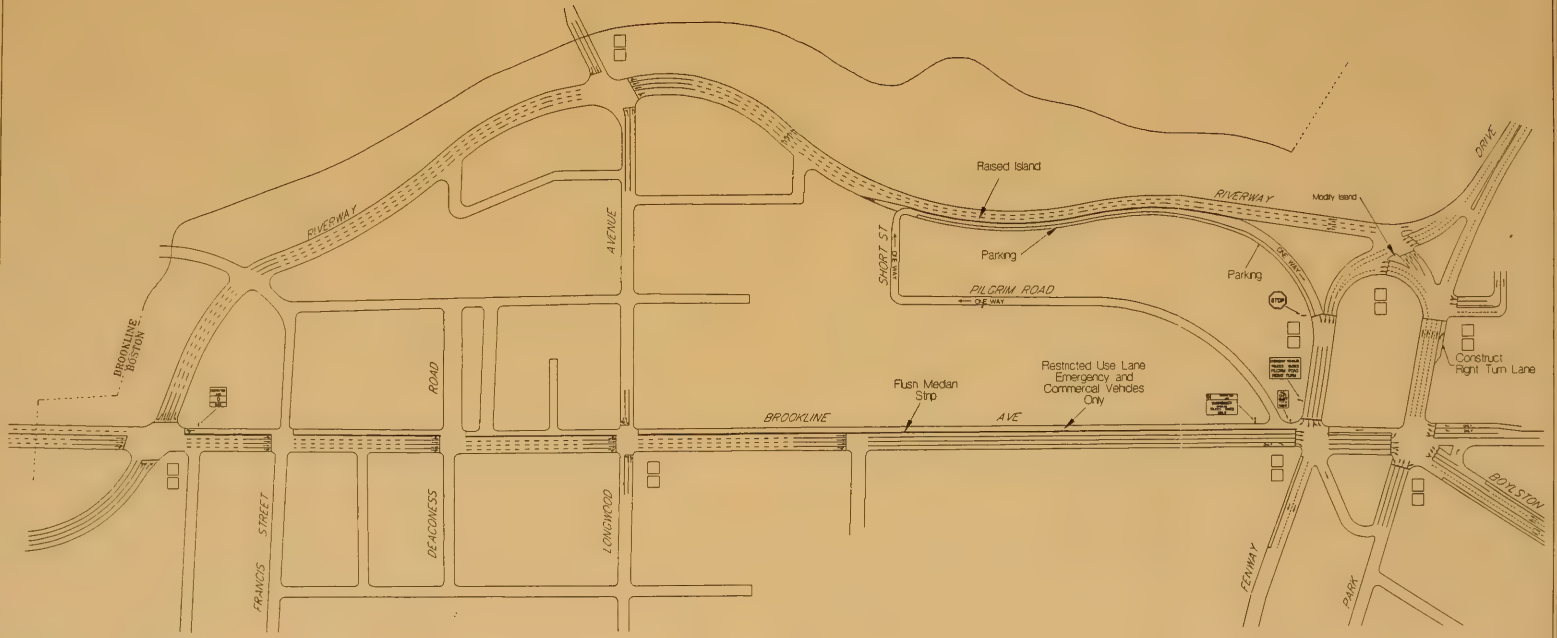


FIGURE 3-12
1995 BUILD WITH ROTARY, U.S. COUPLET, MITIGATION

					BUILD SCENARIOS							
					1		2		3		4	
	1989 EXISTING		1995 NO-BUILD		BUILD NO MITIGATION		BUILD WITH 5-LANE BROOKLINE AVE. & ISOLATED INTERSECTION IMPROVEMENTS		BUILD WITH PURE ROTARY, 5-LANE BROOKLINE AVE. & ISOLATED INTERSECTION IMPROVEMENTS		BUILD WITH PURE ROTARY, SHORT U.S. COUPLET & ISOLATED INTERSECTION IMPROVEMENTS	
SIGNALIZED INTERSECTIONS	DELAY SEC.	LOS	DELAY SEC.	LOS	DELAY SEC.	LOS	DELAY SEC.	LOS	DELAY SEC.	LOS	DELAY SEC.	LOS
1 Park Dr at Beacon St.	26 17	D	28 83	D	28 83	D	18.72	C	18.72	C	18 72	C
2 Park Dr at Riverway	8 89	B	8 96	B	9 41	B	9.41	B	14 65	B	6 73	A
3 Fenway at Brookline	40 25	E	86 37	F	273 80	F	20 65	C	45 00	E	30 96	D
4 Park Dr / Brookline Ave / Boylston St.	156 74	F	245 73	F	398.57	F	274.16	F	38.19	D	91 31	F
5 Brookline Ave at Longwood Ave	397 56	F	1000+	F	1000+	F	116 53	F	116.53	F	366 07	F
6. Riverway at Longwood Ave	228 80	F	1000+	F	1000+	F	50.02	E	69 25	F	26 49	D
7 Kenmore Square	28 58	D	33 24	D	91.54	F	25.94	D	25 94	D	25 94	D
8. Boylston St. at Park Dr.	1 43	A	1 49	A	2.41	A	2.41	A	2.41	A	2.41	A
9. Fenway at Avenue Louis Pasteur	UNSIG.	E	UNSIG.	E	UNSIG.	E	13.39	B	13.39	B	13.39	B
10. Huntington Ave. at Louis Prang & Ruggles St.	48 76	E	1000+	F	1000+	F	15.14	C	15.14	C	11.75	B
11. Brookline Ave at Fullerton St.	UNSIG.	A	UNSIG.	A	UNSIG.	C	UNSIG.	C	UNSIG.	C	UNSIG.	C
12. Riverway at Brookline Ave	872 28	F	1000+	F	1000+	F	63 47	F	63.47	F	71.01	F
13 Park Dr at Fenway (Boylston St.)	23 24	C	35 47	D	64 56	F	10 04	B	10.04	B	10 04	B
14. BU Bridge at Commonwealth Ave.	825 68	F	920 83	F	926 86	F	28 46	D	28 46	D	28 46	D
15 University Rd at Commonwealth Ave.	115 05	F	135 57	F	141 33	F	117.33	F	117.33	F	117 33	F
16 Evansway at Fenway and Louis Prang	38 31	D	55 42	E	123 77	F	16 90	C	16.90	C	16 90	C
17 Charlesgate W at Beacon St	13 07	B	14 27	B	14.40	B	14 40	B	14.40	B	14 40	B
18 Charlesgate E at Rte 1 off ramp	15 66	C	16 76	C	29 35	D	29 35	D	29 35	D	29 35	D
19 Beacon St. at Maitland St. & Mountfort St	UNSIG	A	UNSIG.	A	UNSIG.	A	UNSIG.	A	UNSIG.	A	UNSIG.	A
20 Beacon St at Miner St & Arundel St	UNSIG	A	UNSIG.	A	UNSIG	A	UNSIG.	A	UNSIG	A	UNSIG	A
21. Riverway at Fenway[1]	UNSIG	C	UNSIG	C	UNSIG	C	18 78	C	21 18	C	21 18	C
22 Park Dr at Avenue Louis Pasteur[1]	UNSIG	C	UNSIG.	C		C		C		C		C
23 Park Dr at Site Entrance	2 49	A	2 52	A	2 77	A	2 77	A	5 06	B	5 54	B
24 Carlton St. at Mountfort St.	1000+	F	1000+	F	1000+	F	25 26	D	25 26	D	25 26	D
25 Boylston St at Ipswich St.	82 52	F	1000+	F	967.67	F	171.11	F	171.11	F	171 11	F
26. Longwood Ave at Chapel St	6 79	B	7 03	B	7.06	B	5.38	B	5.38	B	6 11	B
UNSIGNALIZED INTERSECTIONS	RC	LOS	RC	LOS	RC	LOS	RC	LOS	RC	LOS	RC	LOS
9. Fenway at Avenue Louis Pasteur NB Right	519	A	467	A	460	A	460	A	460	A	460	A
WB Left	80	E	50	E	43	E	43	E	43	E	43	E
11. Brookline Ave at Fullerton St. EB Left	889	A	841	A	642	A	642	A	642	A	642	A
SB All	536	A	468	A	220	C	220	C	220	C	220	C
19 Beacon St. at Maitland St. & Mountfort St. CLV =		A	565	A	565	A	565	A	565	A	565	A
20 Beacon St. at Miner St. & Arundel St. CLV =		A	586	A	586	A	586	A	586	A	586	A
21 Riverway at Fenway Merge												
22. Park Drive at Avenue Louis Pasteur Merge												
NO of INTERSECTIONS at LOS A,B,C,D =		15		14		12		20		20		21
NO of INTERSECTIONS at LOS E,F =		11		12		14		6		6		5

Locations 19, 20 LOS determined by critical lane volume analysis.

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TABLE 3-10
AM PEAK HOUR LOS FOR EXISTING, NO-BUILD, BUILD WITHOUT MSC
(with and without Mitigation), PURE ROTARY, AND U.S. COUPLET

					BUILD SCENARIOS							
					1		2		3		4	
	1989 EXISTING		1995 NO-BUILD		BUILD, NO MITIGATION		BUILD, WITH 5'LANE BROOILINE AVE. & ISOLATED INTERSECTION IMPROVEMENTS		BUILD WITH PURE ROTARY, 5-LANE BROOKLINE AVE. & ISOLATED INTERSECTION IMPROVEMENTS		BUILD WITH PURE ROTARY, SHORT U.S. COUPLET & ISOLATED INTERSECTION IMPROVEMENTS	
SIGNALIZED INTERSECTIONS	DELAY SEC.	LOS	DELAY SEC.	LOS	DELAY SEC.	LOS	DELAY SEC.	LOS	DELAY SEC.	LOS	DELAY SEC.	LOS
1. Park Dr at Beacon St.	79 44	F	108 73	F	108.73	F	21 75	C	21 75	C	21.75	C
2 Park Dr at Riverway	8 09	B	10 26	B	11 27	B	11 27	B	17 04	C	9 85	B
3 Fenway at Brookline	96 78	F	148 60	F	383.05	F	15 54	C	25 43	D	20 46	C
4 Park Dr / Brookline Ave / Boylston St	38 34	D	52 00	E	202 41	F	357 14	F	116 30	F	67 47	F
5 Brookline Ave at Longwood Ave	657 52	F	1000+	F	1000+	F	51 52	E	51 52	E	113 29	F
6. Riverway at Longwood Ave	1000+	F	1000+	F	1000+	F	43 92	E	43 92	E	33 77	D
7 Kenmore Square	116 22	F	140 11	F	74 27	F	35 29	D	35 29	D	35 29	D
8. Boylston St at Park Dr.	1 79	A	1 92	A	1 43	A	1.43	A	1.43	A	1.43	A
9 Fenway at Avenue Louis Pasteur	UNSIG	C	UNSIG	D	UNSIG	D	13 62	B	13 62	B	13 62	B
10 Huntington Ave at Louis Prang & Ruggles St.	32 20	D	531 89	F	325 00	F	48 24	E	48 24	E	48 24	E
11. Brookline Ave at Fullerton St.	UNSIG	A	UNSIG.	B	UNSIG.	D	UNSIG	D	UNSIG	D	UNSIG	D
12. Riverway at Brookline Ave	53 15	E	104 40	F	513 61	F	69 53	F	69 53	F	16.23	C
13. Park Dr. at Fenway (Boylston St.)	16 00	C	33 76	D	72 58	F	17 60	C	17 60	C	17 60	C
14. BU Bridge at Commonwealth Ave	902 19	F	1000+	F	857 45	F	43 51	E	43 51	E	43 51	E
15. University Rd. at Commonwealth Ave	60 90	F	68 19	F	134 26	F	33 65	D	33.65	D	33 65	D
16. Evansway at Fenway and Louis Prang	69 57	F	104 17	F	119 74	F	12 90	B	12 90	B	12 90	B
17 Charlesgate W at Beacon St.	14 07	B	17 45	C	20 15	C	20 15	C	20.15	C	20 15	C
18 Charlesgate E at Rte 1 off ramp	18 08	C	20 11	C	16 91	C	16 91	C	16.91	C	16 91	C
19 Beacon St at Maitland St & Mountfort St.	UNSIG	A	UNSIG	A	UNSIG	A	UNSIG.	A		A		A
20 Beacon St at Miner St & Arundel St	UNSIG	A	UNSIG	A	UNSIG	A	UNSIG	A		A		A
21. Riverway at Fenway'	UNSIG	C	UNSIG	C	UNSIG	C	13 34	B	14 13	B	14 13	C
22 Park Dr at Avenue Louis Pasteur'	UNSIG	C	UNSIG	C		C		C		C		C
23. Park Dr at Site Entrance	3 83	A	3 97	A	9 13	B	9.13	B	7 70	B	14 71	B
24 Carlton St. at Mountfort St.	1000+	F	1000+	F	1000+	F	20 32	C	20 32	C	20 32	C
25. Boylston St. at Ipswich St.	10 07	B	11 51	B	21 55	C	24 27	C	24 27	C	24 27	C
26. Longwood Ave. at Chapel St.	12.71	B	14 74	B	14 76	B	12 06	B	12 06	B	11 88	B
UNSIGNALIZED INTERSECTIONS	RC	LOS	RC	LOS	RC	LOS	RC	LOS	RC	LOS	RC	LOS
9. Fenway at Avenue Louis Pasteur NB Right	460	A	424	A	370	B	370	B	370	B	370	B
WB Left	220	C	171	D	115	D	115	D	115	D	115	D
11. Brookline Ave at Fullerton St. EB Left	693	A	663	A	517	A	517	A	517	A	517	A
SB All	420	A	376	B	199	D	199	D	199	D	199	D
19 Beacon St at Maitland St. & Mountfort St. CLV =		A	722	A	722	A	722	A	722	A	722	A
20 Beacon St at Miner St. & Arundel St. CLV =		A	741	A	741	A	741	A	741	A	741	A
21. Riverway at Fenway Merge												
22 Park Drive at Avenue Louis Pasteur Merge												
NO of INTERSECTIONS at LOS A,B,C,D =		16		14		13		20		20		22
NO of INTERSECTIONS at LOS E,F =		10		12		13		6		6		4

Locations 19, 20 LOS determined
by critical lane volume analysis.

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TABLE 3-11

PM PEAK HOUR LOS FOR EXISTING, NO-BUILD, BUILD WITHOUT MSC (with and without Mitigation), PURE ROTARY, AND U.S. COUPLET

Scenario 2: Build with 5-Lane Brookline Avenue Section With Isolated Intersection Mitigations

This scenario as compared to the No-Build scenario shows that during the AM peak hour 9 locations will improve in LOS, 15 will remain the same, and 2 will drop in LOS. Five of the 9 locations that improve will be raised out of the LOS E-F range. In summary there will be 20 locations operating at LOS A-D, and 6 locations operating at LOS E-F.

During the PM peak hour, 13 locations will improve in LOS, 9 will remain the same, and four will drop in LOS. Six of the 13 locations will be raised out of the LOS E-F range. In summary there will be 20 locations operating at LOS A-D, and 6 locations operating at LOS E-F conditions.

Scenario 2: Intersection Improvements

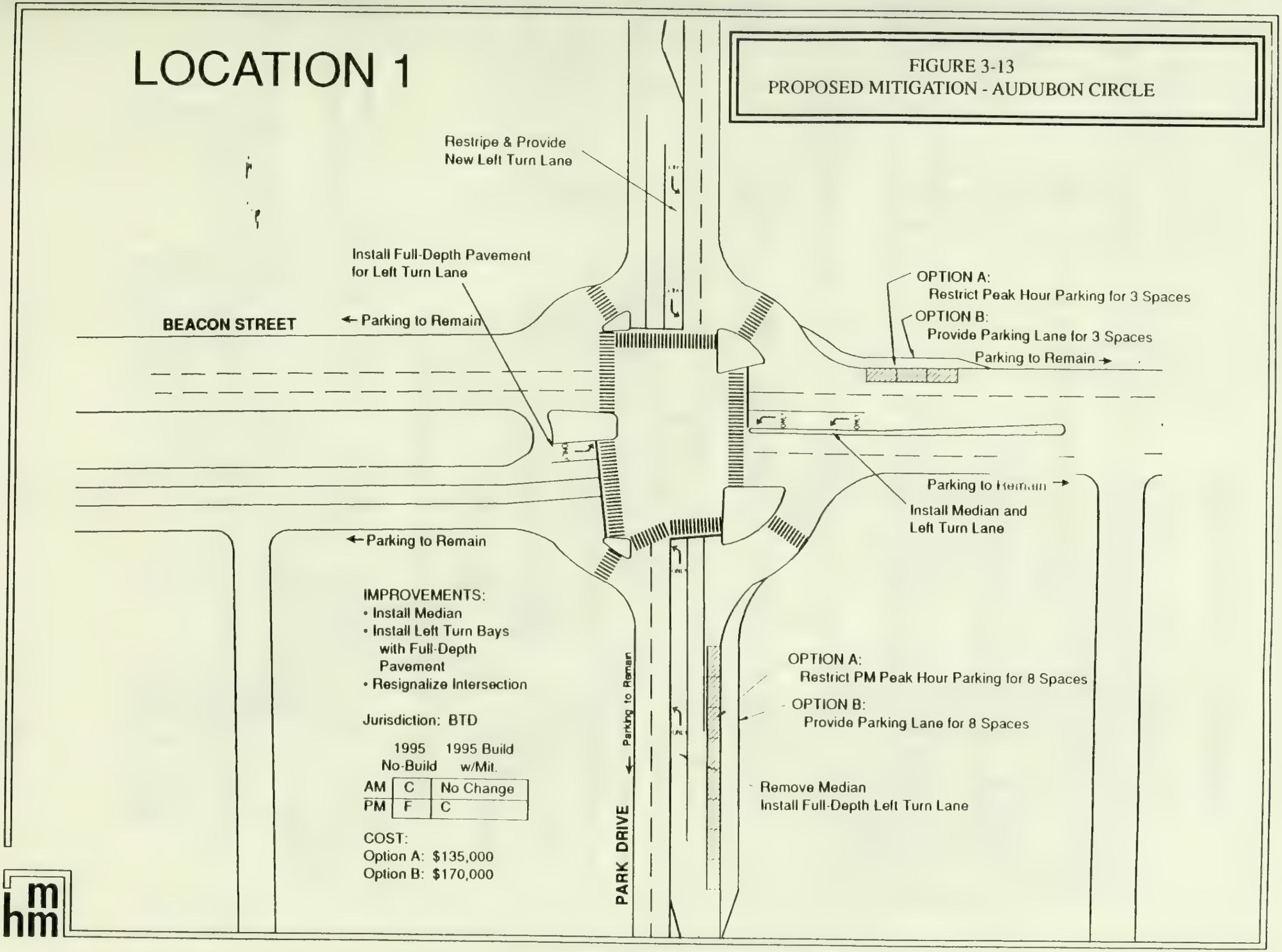
Location 1 - Park Drive at Beacon Street

This intersection is known as Audubon Circle. The mitigation here calls for adding left turn storage lanes for each approach, resignalization, new pedestrian ramps, pavement markings, signs and minor utility work (see Figure 3-13). There are two options to providing for the new left turn lanes.

A. The first option would be to restrict peak hour parking on Park Drive, and Beacon Street. Eight spaces on northbound Park and 3 spaces on westbound Beacon would be posted "No Parking" during both peak periods. Median work for Park Drive and Beacon Street is necessary to provide for the exclusive left turn lanes. The cost of this improvement is approximately $135,000.

B. The second option would be to maintain all parking spaces on Park Drive and Beacon Street, and to set back the new curbline seven feet from the roadway centerline. This sidewalk work would be approximately 160 feet on northbound Park and 60 feet on westbound Beacon Street. No sidewalk work is needed on southbound Park, or eastbound Beacon Street. The cost of this work is approximately $170,000.

FIGURE 3-13
PROPOSED MITIGATION - AUDUBON CIRCLE



Restripe & Provide New Left Turn Lane

Install Full-Depth Pavement for Left Turn Lane

OPTION A:
Restrict Peak Hour Parking for 3 Spaces
OPTION B:
Provide Parking Lane for 3 Spaces

Install Median and Left Turn Lane

OPTION A:
Restrict PM Peak Hour Parking for 8 Spaces
OPTION B:
Provide Parking Lane for 8 Spaces

Remove Median
Install Full-Depth Left Turn Lane

IMPROVEMENTS:
- Install Median
- Install Left Turn Bays with Full-Depth Pavement
- Resignalize Intersection

Jurisdiction: BTD

	1995 No-Build	1995 Build w/Mit.
AM	C	No Change
PM	F	C

COST:
Option A: $135,000
Option B: $170,000

Location 2 - Park Drive at the Riverway

For this option the traffic engineers propose construction of pedestrian ramps, pedestrian signal heads, signal retiming, and crosswalk pavement markings (see Figure 3-14). The cost of this work is approximately $12,000.

As compared to the No-Build, the AM and PM LOS will remain at LOS B.

Location 3 - Fenway at Brookline Avenue

For this option the traffic engineers propose construction of pedestrian ramps, signal retiming, and new pavement markings (see Figure 3-14). The cost of this work is approximately $15,000.

As compared to the No-Build, the AM and PM LOS will improve from LOS F to C.

Location 4 - Park Drive/Brookline Avenue/Boylston Street

At this location, the mitigation is to coldplane (mill) the existing surface, and resurface the entire intersection. This work will provide a smoother riding surface. Currently vehicles on Park Drive westbound must slow due to the irregular roadway grades. Mitigation also includes new pedestrian ramps and crosswalk markings. The signal will be retimed, and will provide for adequate pedestrian phases (see Figure 3-14). The cost for this work is approximately $50,000.

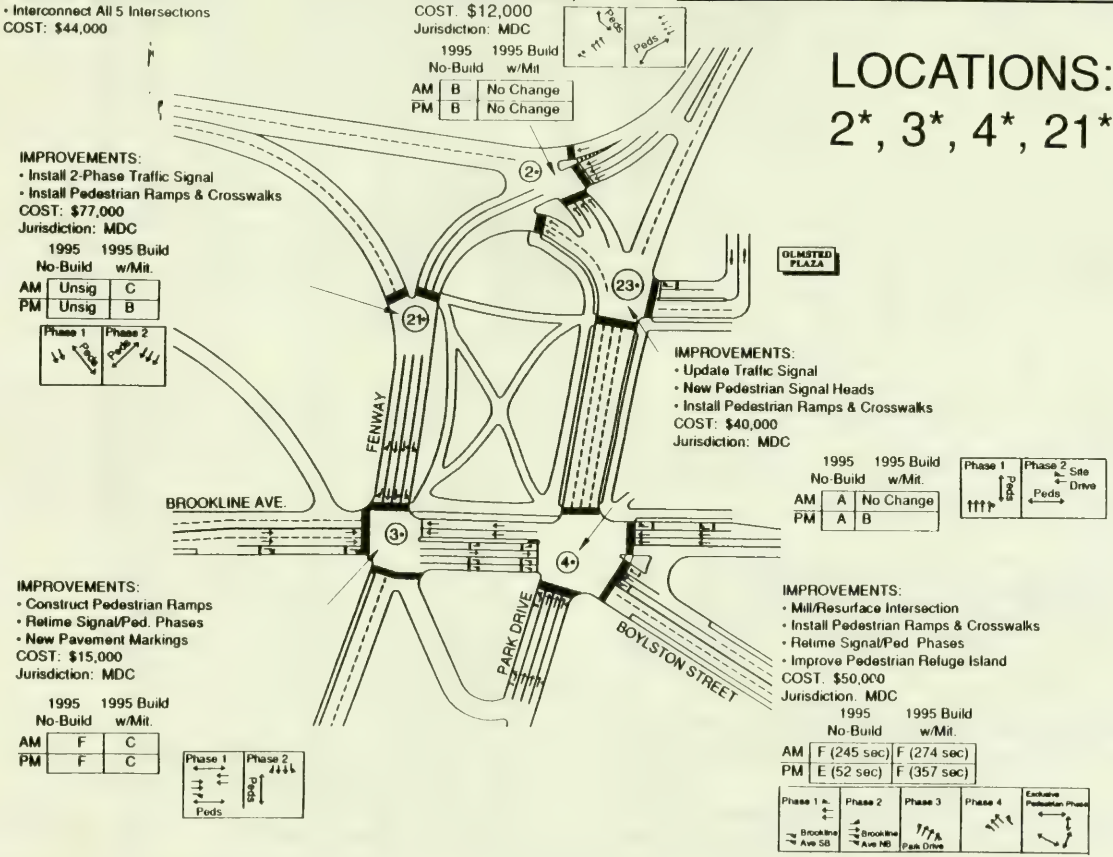
As compared to the No-Build, the AM LOS will remain at LOS F, and the PM LOS will drop from LOS E to LOS F.

Location 5 - Brookline Avenue at Longwood Avenue

Due to the new 5-lane section the signal equipment must be reworked, new 5 section signal heads installed (see Figure 3-15), and new signs and pavement markings installed. The cost of this work is approximately $21,000.

As compared to the No-Build, the AM LOS will improve from 1000 seconds delay to 116 seconds delay (LOS F to LOS F), and the PM LOS will drop from LOS E to LOS F.

FIGURE 3-14
PROPOSED MITIGATION - SEARS CIRCLE



LOCATIONS:
2*, 3*, 4*, 21*, 23*

ROTARY IMPROVEMENTS:
- Interconnect All 5 Intersections

COST: $44,000

IMPROVEMENTS:
- Install Pedestrian Ramps & Crosswalks
- Retime Signal/Ped Phases
- New Pavement Markings

COST. $12,000
Jurisdiction: MDC

	1995 No-Build	1995 Build w/Mit
AM	B	No Change
PM	B	No Change

IMPROVEMENTS:
- Install 2-Phase Traffic Signal
- Install Pedestrian Ramps & Crosswalks

COST: $77,000
Jurisdiction: MDC

	1995 No-Build	1995 Build w/Mit.
AM	Unsig	C
PM	Unsig	B

IMPROVEMENTS:
- Update Traffic Signal
- New Pedestrian Signal Heads
- Install Pedestrian Ramps & Crosswalks

COST: $40,000
Jurisdiction: MDC

	1995 No-Build	1995 Build w/Mit.
AM	A	No Change
PM	A	B

IMPROVEMENTS:
- Construct Pedestrian Ramps
- Retime Signal/Ped. Phases
- New Pavement Markings

COST: $15,000
Jurisdiction: MDC

	1995 No-Build	1995 Build w/Mit.
AM	F	C
PM	F	C

IMPROVEMENTS:
- Mill/Resurface Intersection
- Install Pedestrian Ramps & Crosswalks
- Retime Signal/Ped Phases
- Improve Pedestrian Refuge Island

COST. $50,000
Jurisdiction. MDC

	1995 No-Build	1995 Build w/Mit.
AM	F (245 sec)	F (274 sec)
PM	E (52 sec)	F (357 sec)

LOCATION 5

FIGURE 3-15
PROPOSED MITIGATION - BROOKLINE AT LONGWOOD

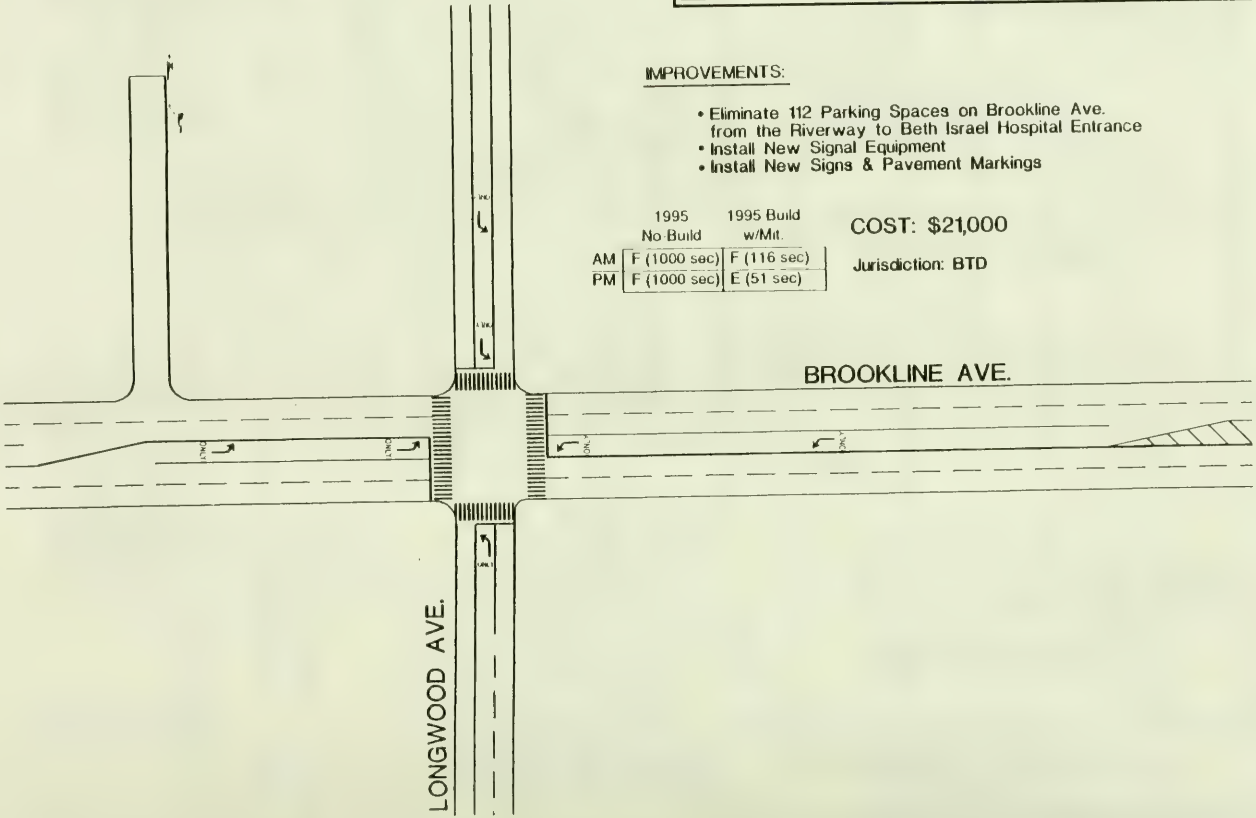
IMPROVEMENTS:

- Eliminate 112 Parking Spaces on Brookline Ave. from the Riverway to Beth Israel Hospital Entrance
- Install New Signal Equipment
- Install New Signs & Pavement Markings

	1995 No-Build	1995 Build w/Mit.
AM	F (1000 sec)	F (116 sec)
PM	F (1000 sec)	E (51 sec)

COST: $21,000

Jurisdiction: BTD



Location 6 - Riverway at Longwood Avenue

MASCO and its traffic consultant have recommended that this intersection undergo signalization and pedestrian crosswalk improvements (see Figure 3-16). Due to heavy pedestrian movements, and heavy northbound left turns on the Riverway, they have devised a scheme to permit these flows to operate concurrently which eliminates the additional pedestrian phase. They propose a triangular pedestrian crosswalk layout, with pedestrian bollards and chains to channelize pedestrians. The bollards are to prohibit pedestrians from crossing the Riverway south of the intersection. The BTD and MDC have reservations concerning this improvement. They feel that the pedestrians will ignore the crosswalk restrictions and continue on their original paths. The traffic engineers feel that this measure will improve levels of service without involving roadway/bridge widening, or parkland acquisition. Further discussions are needed in order to attain consensus on the planned improvements at this location (see Figure 3-17). The cost for this improvement is approximately $20,000.

As compared to the No-Build, the AM LOS will improve from LOS F (1000 seconds delay) to LOS E (50 seconds delay), and the PM LOS will improve from LOS F (1000 seconds delay) to LOS E (44 seconds). This is a tremendous improvement over projected No-Build LOS.

Location 7 - Kenmore Square

The traffic engineers propose that the signal timings be adjusted at this location to minimize overall delay. This signal is on a coordinated signal system, and the optimal signal cycle in 1995 will be 104 seconds. More green time should be allocated to Beacon Street westbound, as green time for other approaches could be reduced. The cost for this improvement is approximately $5,000.

As compared to the No-Build, the AM LOS will remain at LOS D, and the PM LOS will improve from LOS F to D.

Location 8 - Boylston Street at Park Drive

The AM and PM 1995 Build LOS will be LOS A at this location. Slight signal timing modifications will be required at a cost of approximately $5,000.

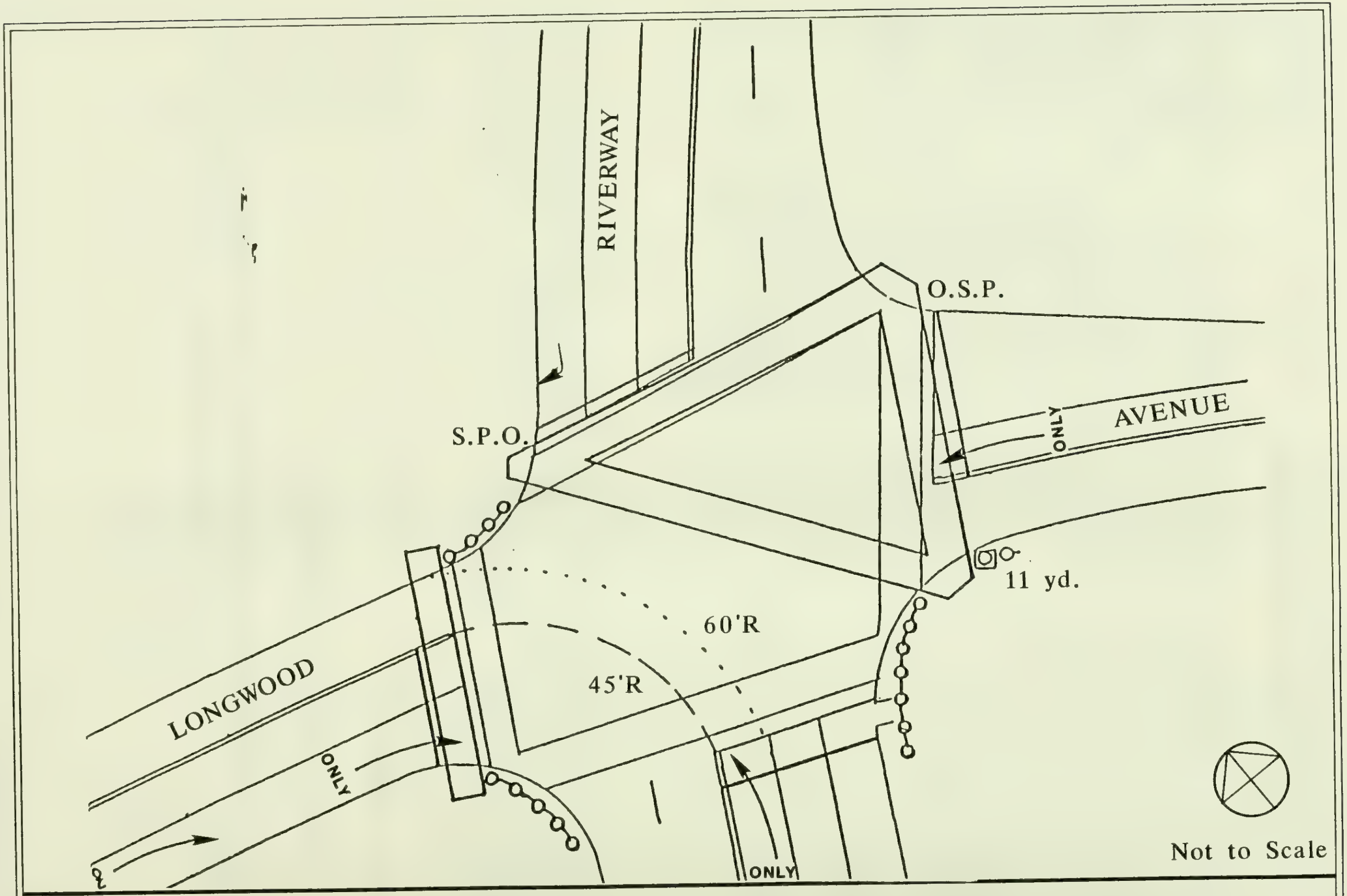
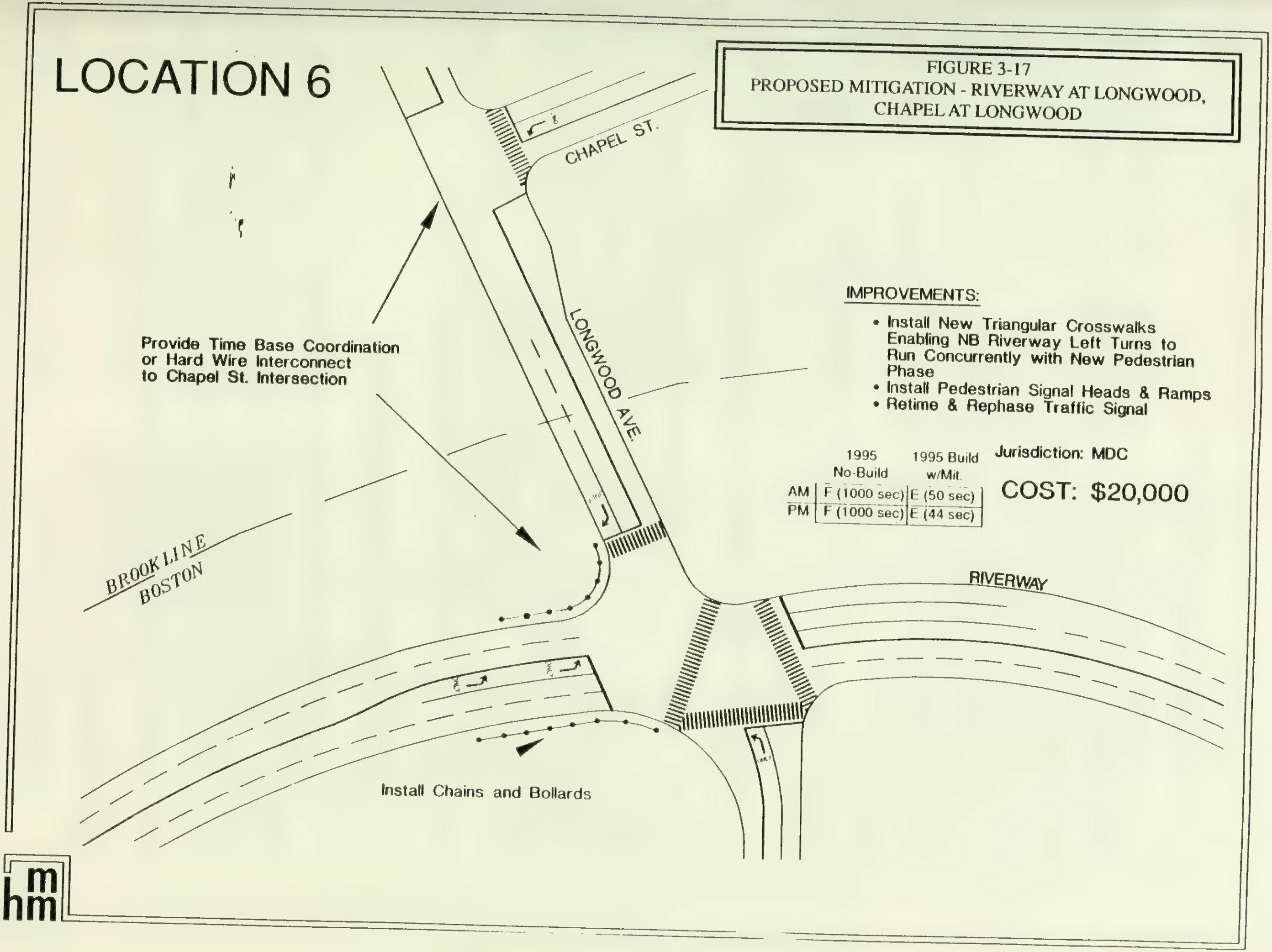


FIGURE 3-16
RECOMMENDED INTERSECTION IMPROVEMENTS BY MASCO

LOCATION 6

FIGURE 3-17
PROPOSED MITIGATION - RIVERWAY AT LONGWOOD, CHAPEL AT LONGWOOD



Provide Time Base Coordination or Hard Wire Interconnect to Chapel St. Intersection

Install Chains and Bollards

IMPROVEMENTS:

- Install New Triangular Crosswalks Enabling NB Riverway Left Turns to Run Concurrently with New Pedestrian Phase
- Install Pedestrian Signal Heads & Ramps
- Retime & Rephase Traffic Signal

	1995 No-Build	1995 Build w/Mit.
AM	F (1000 sec)	E (50 sec)
PM	F (1000 sec)	E (44 sec)

Jurisdiction: MDC

COST: $20,000

Location 9 - Fenway at Avenue Louis Pasteur

The 1995 Build LOS will be LOS A/B for Louis Pasteur right turns, and LOS D/E for Fenway westbound left turns. There are 11 nationally recognized signal warrants described in the manual on uniform traffic control devices (MUTCD) published by the Federal Highway Administration. According to the MUTCD, signal warrant #11 is satisfied in 1995 (Fenway volume = 1248 vph, and Louis Pasteur volume = 309 vph). The MUTCD does not present reduction factors for the side street volume being all right turns. The traffic engineers propose that a new 2-phase signal be installed, with loop detectors, conduit, pedestrian ramps, crosswalks, and sidewalk reconstruction. The cost for this improvement is approximately $61,000.

As compared to the No-Build LOS, the AM LOS will be LOS B/E, and the PM LOS will be B/D.

Location 10 - Huntington Avenue/Louis Prang/Ruggles Street

For this intersection the traffic engineers propose that northbound Huntington Avenue be widened about 6 feet to provide a right turn lane. Proposed improvements also provide new pavement markings, provide pedestrian ramps and sidewalks, coldplane and overlay the new right turn lane, and update the signal equipment. On eastbound Louis Prang Street the existing centerline should be relocated to provide for exclusive left and right turn lanes (see Figure 3-18). The cost of these improvements is approximately $39,000.

As compared to the No-Build, the AM LOS will improve from LOS F to LOS C, and the PM LOS will improve from LOS F (220 seconds delay) to LOS E (48 seconds).

Location 11 - Brookline Avenue at Fullerton Street

The traffic engineers propose that the Fullerton Street approach be widened to allow for an exclusive left, and an exclusive right turn lane. According to the 11 MUTCD signal warrants this location does not warrant signalization. According to Warrant 11, when the major street volume is 900 vph (both directions), and the minor street volume exceeds 230 vph, signalization is warranted. The 1995 Build volume for Fullerton Street is only 77, and 200 vph for both peak periods. Therefore, the engineers do not recommend signalization. The roadway widening, full depth pavement, coldplaning, overlay, pedestrian ramps, crosswalks, and signing will cost approximately $43,000.

As compared to the No-Build LOS, the AM LOS will drop from LOS A to C, and the PM LOS will drop from LOS B to D.

LOCATION 10

FIGURE 3-18
PROPOSED MITIGATION - HUNTINGTON AT RUGGLES AND LOUIS PRANG

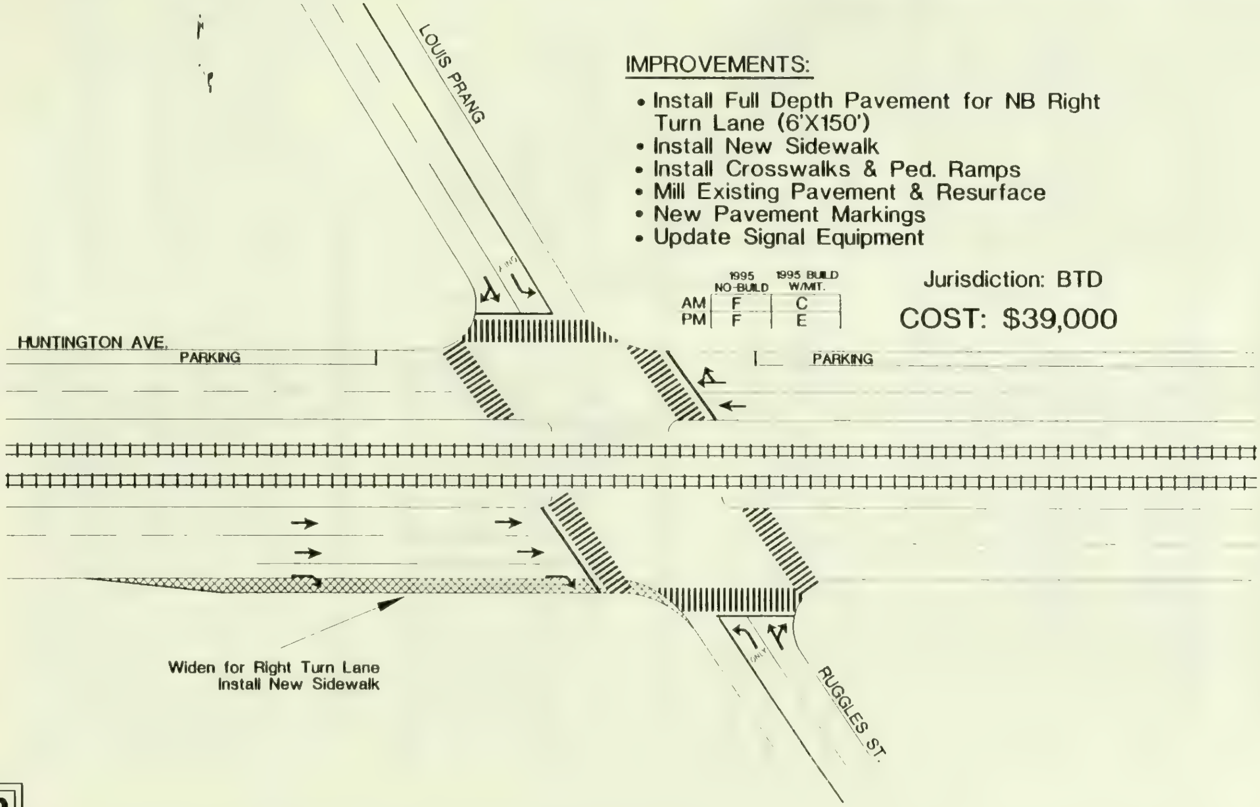
IMPROVEMENTS:

- Install Full Depth Pavement for NB Right Turn Lane (6'X150')
- Install New Sidewalk
- Install Crosswalks & Ped. Ramps
- Mill Existing Pavement & Resurface
- New Pavement Markings
- Update Signal Equipment

	1995 NO-BUILD	1995 BUILD W/MIT.
AM	F	C
PM	F	E

Jurisdiction: BTD

COST: $39,000



Widen for Right Turn Lane
Install New Sidewalk

Location 12 - Riverway at Brookline Avenue

Currently this location operates at extremely poor levels of service. The traffic engineers propose the following improvements (see Figure 3-19):

- Prohibit left turns on the Riverway (both directions);
- Eliminate parking on northbound Brookline Avenue for a distance of 250 feet;
- Provide pedestrian ramps and crosswalks;
- Provide new pavement markings and signing;
- Eliminate the raised median on southbound Brookline; and
- Provide one left, and two through lanes on northbound Brookline Avenue.

The cost for these improvements is approximately $30,000.

As compared to the No-Build, the AM LOS will improve from LOS F (1000 seconds delay) to LOS F (63 seconds delay), and the PM LOS will improve from LOS F (104 seconds delay) to LOS F (69 seconds).

Location 13 - Park Drive at the Fenway (Boylston Street)

For this option it is proposed that the signal timings be adjusted to minimize overall intersection delays. Due to the intersection's proximity to the Bowker overpass, and the Massachusetts Turnpike, no geometric improvements are suggested.

The cost of these improvements is approximately $5,000.

As compared to the No-Build, the AM LOS will improve from LOS D to LOS B, and the PM LOS will improve from LOS D to LOS C.

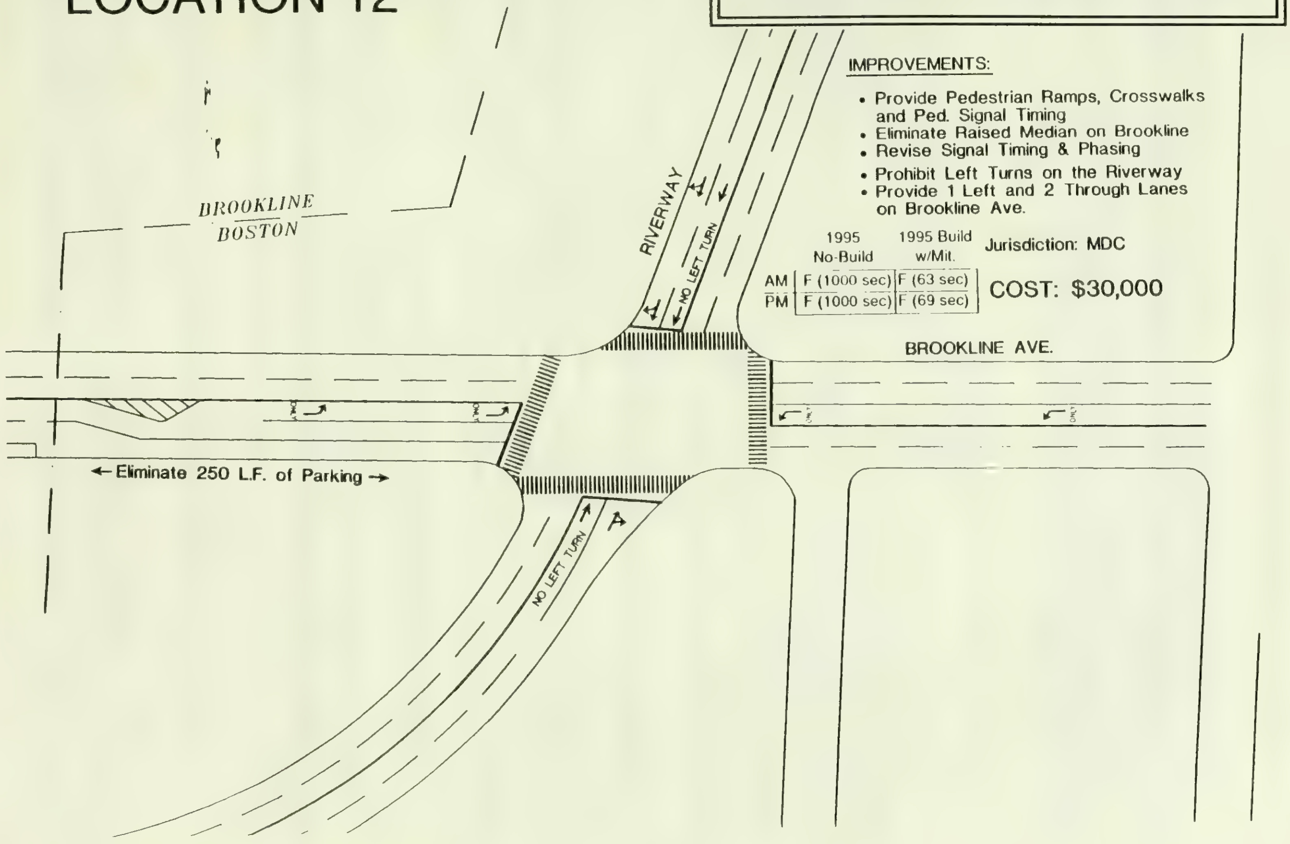
Location 14 - B.U. Bridge at Commonwealth Avenue

For this location, Boston University and VHB have prepared final roadway and signalization plans to widen the existing Commonwealth Avenue westbound right turn lane from 18 feet to 26 feet. The recommended full depth, paving, sidewalks, retaining wall, landscaping, curbing, pavement markings and signal work will cost approximately $60,000. This cost does not include an estimate for right of way.

As compared to the No-Build, the AM LOS will improve from LOS F to LOS D, and the PM LOS will improve from LOS F to LOS E.

FIGURE 3-19
PROPOSED MITIGATION - RIVERWAY AT BROOKLINE

LOCATION 12



IMPROVEMENTS:

- Provide Pedestrian Ramps, Crosswalks and Ped. Signal Timing
- Eliminate Raised Median on Brookline
- Revise Signal Timing & Phasing
- Prohibit Left Turns on the Riverway
- Provide 1 Left and 2 Through Lanes on Brookline Ave.

	1995 No-Build	1995 Build w/Mit.
AM	F (1000 sec)	F (63 sec)
PM	F (1000 sec)	F (69 sec)

Jurisdiction: MDC

COST: $30,000

Location 15 - Commonwealth Avenue at University Road

The traffic engineers propose that this location's signal be retimed to minimize overall delays. The proposed cycle length is 109 seconds. The cost estimate for this improvement is approximately $5,000.

As compared to the No-Build, the AM LOS will improve from LOS F (135 seconds delay) to LOS F (97 seconds), and the PM LOS will improve from LOS F to LOS D.

Location 16 - Evans Way/Fenway/Louis Prang

The signal at this intersection currently operates in a flashing mode. The traffic engineers propose that the signals operate from 7:00 AM to 7:00 PM, and return to flash mode at night. The signal should be interconnected, or a time base coordinator unit installed so that it may run with the Huntington/Ruggles controller. The approximate cost for the signal work is approximately $5,000.

As compared to the No-Build, the AM LOS will improve from LOS F to LOS C, and the PM LOS will improve from LOS F to LOS B.

Location 17 - Charlesgate West at Beacon Street

The traffic engineers have reviewed the signal operations at this location, and the AM 1995 LOS will be LOS B, and the PM LOS will be LOS C. Therefore, no improvements are necessary.

Location 18 - Charlesgate East at U.S. Route 1 Off Ramp

The traffic engineers have reviewed the signal operations at this location, and the AM 1995 LOS will be LOS D, and the PM LOS will be LOS C. Therefore, no improvements are necessary.

Location 19 - Beacon/Maitland/Mountfort Streets

The BTD has requested a re-analysis of this location's level of service using critical lane volume techniques. The proposed AM 1995 LOS will be LOS A, and the PM LOS will be LOS A. Since the Maitland Street connector is no longer being pursued, no road improvements are needed at this location.

Location 20 - Beacon/Miner/Arundel Streets

The BTD has also requested a critical lane volume analysis for this location. The proposed LOS will be A at this location for both the AM and PM peak hours in 1995. No roadway or signal improvements are suggested. The Olmsted project will be denied access to/from Miner Street due to the closure of the driveway to Harvard Community Health Plan. Therefore the projected volumes will not change on Miner Street, and no improvements are necessary.

Location 21 - Riverway at Fenway (Merge Area)

This location is unique in that it has two arterials merging approximately 300 feet before a signalized location. Since it contains a weaving area with a signal at the end of the weaving section, it cannot be analyzed using the HCM Weaving Methodologies (Chapter 4). Field observations indicate that during the peak hour, weaving takes place only when the Fenway-Brookline Avenue signal is green. When the signal is red the queues prohibit vehicle movement. The recommended improvement for this location is to install a 2-phase signal (with concurrent pedestrian phases). This will enable drivers to merge in a platoon fashion under signal control. A crosswalk is also recommended in front of both stoplines to provide for signalized pedestrian control. This new signal is to be coordinated with all other rotary signals, and is to operate on a common signal cycle (see Figure 3-14). The cost of these improvements is approximately $77,000.

As compared to the No-Build, the AM 1995 Build will remain at LOS C, and the PM will improve from LOS C to LOS B.

Location 22 - Park Drive at Avenue Louis Pasteur

This unsignalized location will operate at LOS C during the 1995 AM/PM peak periods. Therefore, no mitigation is suggested for this location.

Location 23 - Park Drive at Site Entrance

The traffic engineers propose that for this location the traffic signal should be updated to include new signal heads for vehicles exiting the site, and vehicles exiting the temporary parking lot in the Circle. New pedestrian signal heads, pedestrian ramps and crosswalk markings are recommended (see Figure 3-14). The cost for these improvements is approximately $40,000.

As compared to the No-Build, the AM LOS will remain at LOS A, and the PM LOS will drop from LOS A to LOS B.

For the interim condition in 1991, when the temporary parking lot is in use, the 1991 AM LOS will be A, and the PM 1991 LOS will be B. The signal, pedestrian ramp and crosswalk improvements should be completed prior to opening the temporary lot (mid to late 1990). It is recommended that all signal equipment be placed in its final location to avoid relocation due to future driveway or curb return work at the site entrance.

Location 24 - Carlton at Mountfort Streets

The traffic engineers propose that this location's signal be retimed to minimize overall delays. The proposed cycle length is 109 seconds. The cost estimate for this improvement is approximately $5,000.

As compared to the No-Build, the AM LOS will improve from LOS F to LOS D, and the PM LOS will improve from LOS F to LOS C.

Location 25 - Boylston Street at Ipswich Street

The traffic engineers propose that this location's signal be retimed to minimize overall delays. The proposed cycle length is 85 seconds. The cost estimate for this improvement is approximately $5,000.

As compared to the No-Build, the AM LOS will improve from LOS F (1000 seconds delay) to LOS F (171 seconds), and the PM LOS will drop from LOS B to LOS C.

Location 26 - Longwood Avenue at Chapel Street

This signalized intersection currently operates on a different signal cycle than the Longwood-Riverway signal. The traffic engineers propose that these signals should be interconnected, or a time base coordinator unit installed, so that they may operate in unison. The approximate cost for the signal work is approximately $15,000.

The AM and PM traffic volumes taken in November indicated reduced traffic flows due to downstream capacity problems at Longwood Avenue and the Riverway. The volumes therefore are low, and the computed LOS are higher than observed in the field.

As compared to the No-Build, the AM/PM LOS will remain at LOS B.

Brookline Avenue 5-Lane Section

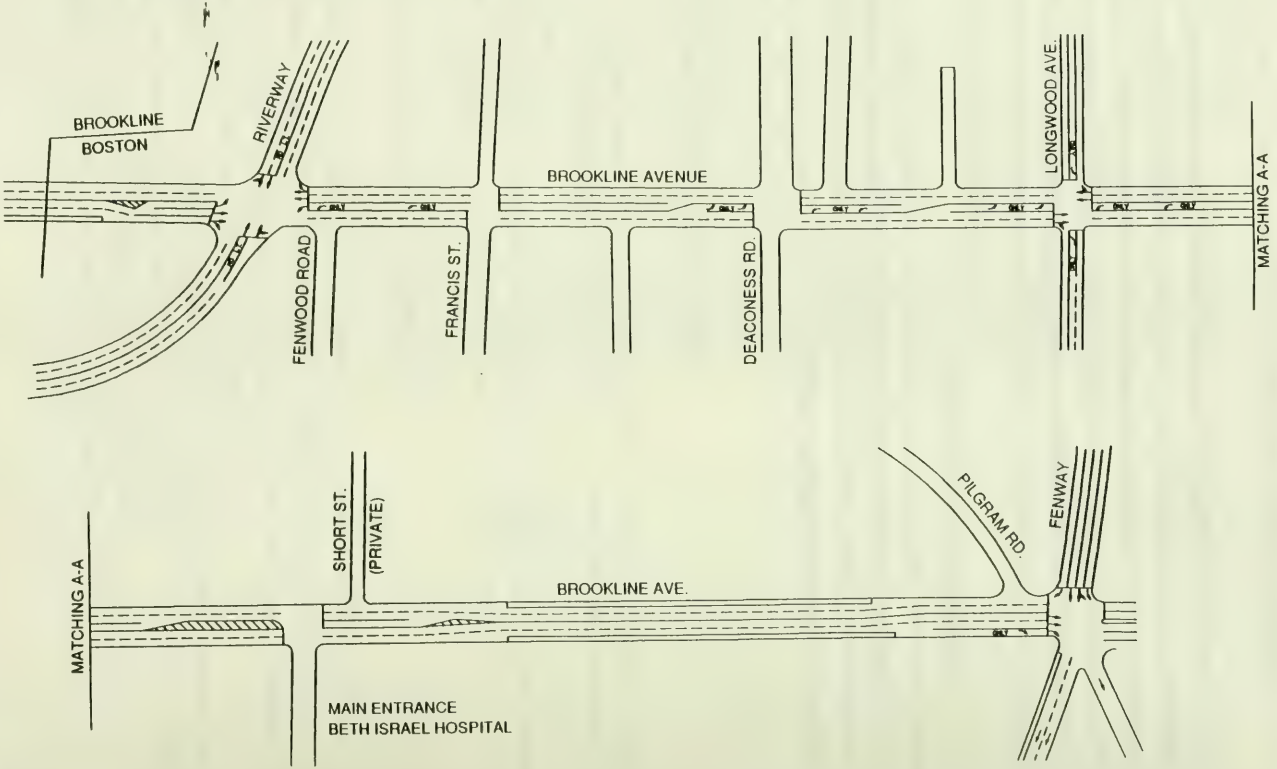
The traffic engineers propose that 118 parking meters be removed from the section of Brookline Avenue from Beth Israel Hospital to just south of the Riverway. The old pavement markings should be removed, and a new 5-lane section be painted. The existing signals at Francis Street, Deaconess Road and Beth Israel Hospital should be revised to accommodate new 5 section signal heads for left turning traffic. Approximately 15 new signs should be installed to prohibit parking (see Figure 3-20). The cost for these improvements is approximately $112,000.

Interconnection of Rotary Signals

A hard wire interconnect, and approximately 1500 feet of steel conduit should be installed around the Sears Circle to interconnect the 5 signals at Locations 2, 3, 4, 21 and 23. The cost for this improvement is approximately $44,000.

FIGURE 3-20
PROPOSED MITIGATION - BROOKLINE AVENUE
5-LANE SECTION

BROOKLINE AVENUE
5-LANE SECTION



Scenario 3: Build With Pure Rotary, 5-Lane Brookline Avenue Section, and Isolated Intersection Improvements

This scenario as compared to the No-Build scenario shows that during the AM peak hour nine locations will improve in level of service, 14 will remain the same, and three will drop in level of service. Six of the nine that improve will be raised out of the LOS E-F range. In summary there will be 20 locations operating at LOS A through D, and six locations operating at LOS E-F conditions.

During the PM peak hour, 13 locations will improve in LOS, 8 will remain the same, and five will drop in LOS. Six of the 13 locations that improve will be raised out of the LOS E-F range. In summary, there will be 20 locations operating at LOS A-D, and six locations operating at LOS E-F conditions.

Scenario 3: Intersection Improvements

Location 1 - Park Drive at Beacon Street

Same Mitigation as Scenario 2.

Location 2 - Park Drive at the Riverway

Due to the pure rotary traffic volumes, this intersection should be reconstructed to provide for four rotary lanes, and two through lanes to the Riverway southbound. The new lane for the rotary will require removal and rebuilding the 2-foot retaining wall that surrounds the parking lot, approximately 2500 square feet of full depth pavement, new pedestrian ramps, sidewalks, and crosswalks, intersection coldplaning and overlay, new overhead luminaires, and resignalization. The cost for this work is approximately $90,000.

As compared to the No-Build, the AM LOS will remain at LOS B, and the PM LOS will drop from LOS B to LOS C.

Location 3 - Fenway at Brookline Avenue

The traffic engineers propose that the Brookline Avenue median be removed to provide for a 6-lane cross section, the curb returns and sidewalks be modified to permit easier left turns for rotary traffic, new pedestrian ramps, crosswalks and signalization be installed (see Figure 3-11). Also, the existing 2-lane U-turn ramp at the east end of the rotary can be removed, the pavement scarified, and the entire area seeded and mulched. This area can be reinstated to the MDC park system. The cost for this work is approximately $153,000.

As compared to the No-Build, the AM LOS will improve from LOS F to LOS E, and the PM LOS will improve from LOS F to LOS D.

Location 4 - Park Drive/Brookline Avenue/Boylston Street

At this location traffic engineers propose mitigation to coldplane (mill) the existing surface, and resurface the entire intersection. This work will provide a smoother riding surface. Currently vehicles on Park Drive westbound must slow due to the irregular roadway grades. Curb return work is also required to improve left turns for rotary traffic. Mitigation also will install pedestrian ramps and restripe all crosswalks. Some signal equipment will also be replaced, and new signs will be installed. The cost for this work is approximately $118,000.

As compared to the No-Build, the AM LOS will improve from LOS F to LOS D, and the PM LOS will drop from LOS E to LOS F.

Location 5 - Brookline Avenue at Longwood Avenue

Same Mitigation as Scenario 2.

Location 6 - Riverway at Longwood Avenue

Same Mitigation as Scenario 2.

Location 7 - Kenmore Square

Same Mitigation as Scenario 2.

Location 8 - Boylston Street at Park Drive

Same Mitigation as Scenario 2.

Location 9 - Fenway at Avenue Louis Pasteur

Same Mitigation as Scenario 2.

Location 10 - Huntington Avenue/Louis Prang/Ruggles Street

Same Mitigation as Scenario 2.

Location 11 - Brookline Avenue at Fullerton Street

Same Mitigation as Scenario 2.

Location 12 - Riverway at Brookline Avenue

Same Mitigation as Scenario 2.

Location 13 - Park Drive at the Fenway (Boylston Street)

Same Mitigation as Scenario 2.

Location 14 - B.U. Bridge at Commonwealth Avenue

Same Mitigation as Scenario 2.

Location 15 - Commonwealth Avenue at University Road

Same Mitigation as Scenario 2.

Location 16 - Evans Way/Fenway/Louis Prang

Same Mitigation as Scenario 2.

Location 17 - Charlesgate West at Beacon Street

Same Mitigation as Scenario 2.

Location 18 - Charlesgate East at U.S. Route 1 Off Ramp

Same Mitigation as Scenario 2.

Location 19 - Beacon/Maitland/Mountfort Streets

Same Mitigation as Scenario 2.

Location 20 - Beacon/Miner/Arundel Streets

Same Mitigation as Scenario 2.

Location 21 - Riverway at Fenway (Merge Area)

The recommended improvement for this location is to install a 2-phase signal (with concurrent pedestrian phases). This will enable drivers to merge in a platoon fashion under signal control. Pedestrian ramps and a crosswalk are also recommended in front of both stoplines to provide for signalized pedestrian control. This new signal is to be coordinated with all other rotary signals, and is to operate on a common signal cycle. The intersection also should be widened (see Figure 3-11) so that rotary traffic can utilize four through lanes and Riverway traffic can use two through lanes. The cost of these improvements is approximately $118,000.

As compared to the No-Build, the AM LOS will remain at LOS C, and the PM LOS will improve from LOS C to LOS B.

Location 22 - Park Drive at Avenue Louis Pasteur

Same Mitigation as Scenario 2.

Location 23 - Park Drive at Site Entrance

Due to the additional rotary lane, the traffic engineers propose that this intersection be widened with new full depth pavement, coldplaning and overlays, new pedestrian ramps and crosswalks, and resignalization. The interim signal equipment should be installed in its final location to avoid reconstruction at a later date. The cost for this work is approximately $110,000.

As compared to the No-Build, the AM/PM peak hour LOS will drop from LOS A to LOS B.

Location 24 - Carlton at Mountfort Streets

Same Mitigation as Scenario 2.

Location 25 - Boylston Street at Ipswich Street

Same Mitigation as Scenario 2.

Location 26 - Longwood Avenue at Chapel Street

Same Mitigation as Scenario 2.

Brookline Avenue 5-Lane Section

Same Mitigation as Scenario 2.

Interconnection of Rotary Signals

Same Mitigation as Scenario 2.

Scenario 4: Build With Pure Rotary, Short U. S. Couplet, and Isolated Intersection Improvements

This scenario as compared to the No Build scenario shows that during the AM peak hour, ten locations will improve in level of service, 13 will remain the same, and three will drop in level of service. Seven of the ten that improve will be raised out of the LOS E-F range. In summary, there will be 21 locations operating at LOS A through D, and five locations operating at LOS E-F conditions.

During the PM peak hour, 13 locations will improve in LOS, 9 locations will remain the same, and four locations will drop in LOS. Eight of 13 that improve will be raised out of the LOS E-F range. In summary there will be 22 locations operating at LOS A-D, and four locations operating at LOS E-F during the PM peak hour.

Location 1 - Park Drive at Beacon Street

Same mitigation as Scenario 2.

Location 2 - Park Drive at the Riverway

Due to the U.S. couplet traffic volumes, this intersection does not need total reconstruction (as shown in Scenario 2 or 3). Currently, there are 3 lanes southbound for Riverway traffic, which is acceptable. The intersection should have new pedestrian ramps, crosswalks, pedestrian signals, and the signal should be retimed. The cost for this work is approximately $30,000.

As compared to the No Build, the AM LOS will improve from LOS B to LOS A, and the PM LOS will remain at LOS B.

Location 3 - Fenway at Brookline Avenue

The traffic engineers propose that the Brookline Avenue median be removed to provide for a 6 lane cross section, the curb returns and sidewalks be modified to permit easier left turns for rotary traffic, new pedestrian ramps, crosswalks and signalization be installed (see Figure 3-12). Also, the existing 2 lane U-turn ramp at the east end of the rotary can be removed, the pavement scarified, and the entire area seeded and mulched. This area can be reinstated to the MDC park system. The cost for this work is approximately $153,000.

As compared to the No Build, the AM LOS will improve from LOS F to LOS D, and the PM LOS will improve from LOS F to LOS C.

Location 4 - Park Drive/Brookline Avenue/Boylston Street

Proposed mitigation at this location is to coldplane (mill) the existing surface, and resurface the entire intersection. This work will provide a smoother riding surface. Currently vehicles on Park Drive WB must slow due to irregular roadway grades. Curb return work is also required to improve left turns for rotary traffic. This mitigation includes providing pedestrian ramps and restripe all crosswalks. Some signal equipment will also be replaced, and new signs will be installed. The cost for this work is approximately $118,000.

As compared to the No Build, the AM LOS will remain at LOS F (245 seconds to 116 seconds), and the PM LOS will drop from LOS E to LOS F.

Location 5 - Brookline Avenue at Longwood Avenue

Due to the couplet traffic volumes, this intersection should have four 12-foot northbound thru lanes and a 16-foot southbound contra-flow truck/bus lane. There will be a flush serrated median to divide traffic. The signals will be reconstructed, and several lane control signs should be installed. The cost for this work is approximately $21,000.

As compared to the No Build, the AM Build LOS will remain at LOS F (1000 sec to 366 sec), and the PM LOS will remain at LOS F (1000 sec to 113 sec).

Location 6 - Riverway at Longwood Avenue

Due to the couplet traffic volumes, this intersection should have four 12-foot southbound thru lanes. The traffic signal equipment will be reworked, and several lane control signs and pavement markings will be installed. The cost for this work is approximately $30,000.

As compared to the No Build scenario, the AM LOS will improve from LOS F to LOS D, and the PM LOS will improve from LOS F to LOS D. This scenario is the only scenario that removes the Longwood Avenue vehicle queues from the Chapel Street intersection.

Location 7 - Kenmore Square

Same mitigation as Scenario 2.

Location 8 - Boylston Street at Park Drive

Same mitigation as Scenario 2.

Location 9 - Fenway at Avenue Louis Pasteur

Same mitigation as Scenario 2.

Location 10 - Huntington Avenue at Louis Prang/Ruggles Street

Same mitigation as Scenario 2.

Location 11 - Brookline Avenue at Fullerton Street

Same mitigation as Scenario 2.

Location 12 - Riverway at Brookline Avenue

Due to the short couplet traffic volumes, the traffic engineers propose the following improvements.

- Eliminate 250 linear feet of parking on NB Brookline Avenue in advance of the intersection.
- Provide for four northbound thru lanes at the stop line, and four northbound thru lanes on Brookline Avenue.
- Provide for one left, two thrus, and one right turn lane on southbound Riverway.
- Provide for one combined left-right lane, and one right turn lane for northbound Riverway traffic.
- Resignalize intersection and eliminate extra signal phase.
- Provide one southbound truck/bus contraflow lane on Brookline Avenue.

The cost for these improvements is approximately $30,000.

As compared to the No Build scenario, the AM Build LOS will remain at LOS F (1000 sec to 75 sec), and the PM Build LOS will improve from LOS F to LOS C.

Location 13 - Park Drive at Fenway (Boylston St.)

Same mitigation as Scenario 2.

Location 14 - B.U. Bridge at Commonwealth Avenue

Same mitigation as Scenario 2.

Location 15 - University Road at Commonwealth Avenue

Same mitigation as Scenario 2.

Location 16 - Evansway and Fenway and Louis Prang

Same mitigation as Scenario 2.

Location 17 - Charlesgate West at Beacon Street

Same mitigation as Scenario 2.

Location 18 - Charlesgate East at U.S. Route 1 Off Ramp

Same mitigation as Scenario 2.

Location 19 - Beacon Street/Maitland Street/Mountfort Street

Same mitigation as Scenario 2.

Location 20 - Beacon/Miner/Arundel Streets

Same mitigation as Scenario 2.

Location 21 - Riverway at Fenway (Merge Area)

Due to the short couplet traffic volumes, the Riverway eastbound volumes will drop substantially. Traffic engineers expect only 100± vehicles per hour entering from the Riverway and Short Street. Therefore, the recommended improvement calls for stop sign control of the Riverway at the merge area. The cost of these improvements is approximately $100.

As compared to the No Build, the AM/PM 1995 Build LOS will improve to LOS C.

Location 22 - Park Drive at Avenue Louis Pasteur

Same mitigation as Scenario 2.

Location 23 - Park Drive at Site Entrance

The traffic engineers propose that this intersection be widened to accommodate a new northbound right turn lane with new full depth pavement, coldplaning and overlays, new pedestrian ramps and crosswalks, and resignalization. The interim signal equipment should be installed in its final location so to avoid reconstruction at a later date. The cost for this work is approximately $110,000.

Both the AM/PM peak hour LOS will drop from LOS A (No Build) to LOS B (Build).

Location 24 - Carlton at Mountfort Street

Same mitigation as Scenario 2.

Location 25 - Boylston Street at Ipswich Street

Same mitigation as Scenario 2.

Location 26 - Longwood Avenue at Chapel Street

Same mitigation as Scenario 2.

Brookline Avenue from Riverway to Fenway

The traffic engineers propose a flush median be installed, and the four northbound lanes, one southbound lane operation be implemented. All signals would need reconstruction. The estimated cost is approximately $110,000.

Riverway from Park Drive to Brookline Avenue

The traffic engineers propose that a raised median be installed from Short Street to the Riverway-Fenway merge area. This raised median will divide the on street parkers from the three southbound through lanes on the Riverway. New signs and pavement markings are also recommended. The cost for these improvements is approximately $112,000.

Interconnection of Rotary Signals

Same mitigation as Scenario 2.

3.4.5 Recommending a Preferred Build Scenario

In order to recommend a preferred build scenario several factors were considered. First the traffic engineers summed the costs of each scenario. These estimated costs are outlined on Table 3-12. As might ave been expected, Scenario #2, which entails improving the existing system, resulted in a smaller total cost than the more elaborate reconfigurations. Scenarios #3 and #4 are roughly comparable to each other in total cost.

Next the engineers tried to examine the cost of improvements versus the level of traffic flow improvement. This comparison is outlined n Table 3-13. First, this table is an indicator that the level of improvements is quite similar for the three mitigated scenarios. Each improves LOS at several intersections. This table also shows a crude average cost per intersection with improved traffic flow. In this comparison, Scenario #2 shows lower average costs per improved intersection in both the AM and PM periods. On this basis it appears tht Scenario #2 has a noticeably higher cost/benefit ratio. Since fund to implement mitigation are limited this is an important factor. The Olmsted Plaza developer has pledged a budget of $500,000 toward system-wide traffic improvements. This means that nearly 60% of the Scenario #2 improvements can be covered exclusively by Olmsted Plaza funding, leaving only $344,000 to be made up from other sponsors, whereas only 40-43% of the improvements in the other pair of scenarios is covered, leaving $661,00-$739,000 to be "found" elsewhere.

Upon reviewing the three mitigation scenarios MDC discouraged further consideration of Scenario #3, the pure rotary. It did so based upon its concern that this design would create unreasonable pressures on the Riverway. This left Scenarios #2 and #3 as the remaining candidates.

After comparing the technical merits of the remaining mitigation scenarios, and their costs, the traffic engineers concluded that the logical solution is to proceed with the implementation of Scenario #2 in the short term, while retaining consideration of Scenario #4 as a consideration in the longer term. This is possible since nothing in the Scenario #2 design forecloses the ability to reconsider the one-way couplet at a later date.

Table 3-14 is a rough suggested schedule for implementing the suggested mitigation plan. It outlines the estimated costs for proposed improvements at each location, a suggested schedule for putting the improvements in place, and the agency with jurisdiction over the location at which improvements are recommended.

3.4.6 Selection of the Preferred Build Scenario

Table 3-12 is a one page summary of the estimated costs of each set of mitigation measures.

TABLE 3-12

OVERALL COST SUMMARY

(in 1000 $)

Description	Scenario #1	Scenario #2 Cost	Scenario #3 Cost	Scenario #4 Cost
INT. # 1	0	135 to 170	135 to 170	135 to 170
INT. # 2	0	12	90	30
INT. # 3	0	15	153	153
INT. # 4	0	50	118	118
INT. # 5	0	21	21	21
INT. # 6	0	20	20	30
INT. # 7	0	5	5	5
INT. # 8	0	5	5	5
INT. # 9	0	61	61	61
INT. # 10	0	39	39	39
INT. # 11	0	43	43	43
INT. # 12	0	30	30	30
INT. # 13	0	5	5	5
INT. # 14	0	60	60	60
INT. # 15	0	5	5	5
INT. # 16	0	5	5	5
INT. # 17	0	0	0	0
INT. # 18	0	0	0	0
INT. # 19	0	0	0	0
INT. # 20	0	0	0	0
INT. # 21	0	77	84	0
INT. # 22	0	0	0	0
INT. # 23	0	0	110	110
INT. # 24	0	5	5	5
INT. # 25	0	5	5	5
INT. # 26	0	15	15	15
Brookline Ave.	0	112	112	112
Riverway	0	0	0	110
Interconnection	0	44	44	44
TOTALS	0	$809-844	$1204-1239	$1126-1161

TABLE 3-13

COST/BENEFIT COMPARISONS

	SCENARIO			
	1	2	3	4
Approximate Cost (x $1000)	0	844	1239	1161
AM Peak Hour				
# Locations at LOS A-D	12	19	19	20
# Locations at LOS E-F	14	7	7	6
Locations With Improved LOS	0	7	9	8
Avg. Cost Per Improved Location	--	120	138	145
PM Peak Hour				
# Locations at LOS A-D	13	21	21	23
# Locations at LOS E-F	13	5	5	3
Locations With Improved LOS	0	10	7	11
Avg. Cost Per Improved Location	--	84	177	106

TABLE 3-14

PROPOSED TRAFFIC MITIGATION SCHEDULE

Location	Cost (x $1000)	Schedule	Reviewing Agency, Jurisdiction
1	135-170	1990	BTD
2	12	1990	MDC
3	15	1990	MDC
4	50	1990	MDC
5	21	1992	BTD
6	20	1992	MDC
7	5	1992	BTD
8	5	1992	MDC
9	61	1992	MDC
10	39	1991	BTD
11	43	1991	BTD
12	30	1992	MDC
13	5	1994	MDC
14	60	1992	BTD
15	5	1992	BTD
16	5	1992	MDC
17	0	--	BTD/MDC
18	0	--	BTD/MDC
19	0	--	BTD
20	0	--	BTD
21	77	1990	MDC
22	0	--	MDC
23	40	1990	MDC
24	5	1992	BTD
25	5	1992	BTD
26	15	1991	MDC, Brookline
Brookline Ave. (5-Lane)	112	1992	BTD
Rotary Interconnection	44	1990	BTD, MDC
	$809-844		

3.5 Public Transportation

3.5.1 Operations

The complete assessment of the public transportation system serving the proposed Olmsted Plaza site has been presented in the DPIR/DEIR. The assessment results provided an extensive evaluation of the existing operating conditions and detailed analyses of future conditions. Although adequate information on the existing and future scenarios has been compiled for the project impact assessment, a number of issues and questions have been raised since the completion of the DPIR/DEIR. In this section, additional information regarding these issues and comments are provided.

The main issue raised deals with the MBTA Green Line operations. Due to the project's location and mix of medical, institutional and residential land uses, the primary concern was the appropriateness of the timing of the MBTA Green Line Fenway Park Station study. According to the local community, student ridership demand at Fenway Park Station is high during the academic year, and drops during summer recess. As stated in the DPIR/DEIR, the peak period ridership observations were made in mid-June of 1989, during which the majority of the academic institutions within the study area were on summer vacation. However, it should be noted the study conducted at the Fenway Park Station was to determine the quality of the service provided by the Green Line, including service frequency and load factors, which directly affect the ridership at the station. The Green Line capacity is limited not by the Fenway Park Station, but by the bottleneck segment between Copley and Arlington Stations. The significance of the capacity analysis of this segment has been described in detail in the DPIR/DEIR. The student-rider demand at Fenway Park Station is a factor in the capacity at the bottleneck segment, but it is not significant to the quality of service analysis at the station.

In order to verify the above concerns, a ridership survey at Fenway Park Station was conducted again during the AM and PM peak periods on November 29 and 30, 1989. A complete report on the survey is attached in Appendix II.

The estimate of existing peak hour capacity at the bottleneck section of the Green Line was completed in the DPIR/DEIR. Concerns were raised on the daily variation of capacity vs. demand. The FPIR/FEIR for the Prudential Center Redevelopment Project[1] presented data on the day-to-day average peak hour capacity and demand. This data was collected at Arlington Station during a week-long period in September/October, 1988. Based upon these observations, the average daily peak hour capacity and demand were estimated. These results are summarized in Table 3-15.

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[1] Final Project and Environmental Impact Report, the Prudential Property Company, Inc., November 1989, Vol. 1, p. 4-81.

TABLE 3-15
GREEN LINE DAY-TO-DAY VARIATION
EVENING PEAK HOUR OUTBOUND
AT ARLINGTON STATION

Date	Day of Week	Headway (Secs.)	Trains	Cars	Capacity*	Riders	R/C**	Weather
9/16/88	Fri.	77	47	83	10,790	6,490	0.60	cool, clear
9/22/88	Thur.	88	41	70	9,100	8,360	0.92	cool, clear
9/28/88	Wed.	88	41	70	9,100	8,660	0.95	cool, clear
10/4/88	Tue.	68	53	85	11,050	9,640	0.87	cool, drizzle
Average		80	45.5	77	10,010	8,890 ***	0.89	

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* Capacity is planning capacity (130 passengers per car).

** Ratio of riders to planning capacity.

*** Excludes 9/16/88 observation.

As shown in the table, Friday observations showed a low demand to capacity ratio, with the rest of the weekdays showing high ratios. The average daily demand-capacity ratio, excluding Friday, was 0.89, which is identical to the one presented in the DPIR/DEIR.

In order to maximize rolling stock utilization on the Green Line during the peak hour, a cross-over switch is suggested for Fenway Park Station. This cross-over switch can provide a turn-around for non-peak direction trains allowing them to reverse direction without having to travel to the terminal. This improvement can directly increase the peak direction service frequency based upon the same number of available trains. This recommendation coincides with the current MBTA improvement plan at Fenway Park Station. According to R.W. Beck Associates, Inc., of Waltham, Massachusetts, the final design plans for a full cross-over switch have been completed for the MBTA.

The preliminary estimation of the project impact to the Green Line has resulted in a total demand of 13,100 pph at the Copley-Arlington segment during the peak hour. In order to accommodate the anticipated demand, the Green Line needs an increase in the current operation level of from 2.0 cars per train to 2.3 cars per train during the peak hour in 1995, provided that the service frequency remains the same.

The MBTA environmental coordinator has indicated that the MBTA has proposed a purchase plan to add 150 new cars to the Green Line which is pending funding at this time. These additional cars will enable the MBTA to expand its fleet to 2.3 cars per train during the peak hour. Also, the MBTA has confirmed that the Automatic Vehicle Identification (AVI) system will be installed on the Green Line system. The computer based AVI system will enable the Green Line dispatcher to monitor vehicle movement and density through the on-line information. Then the dispatcher can constantly update the vehicle assignment to route/destinations as needed based upon the on-line information. This advanced system will assist the MBTA to improve the Green Line capacity planning and peak period scheduling.

Also presented in the Prudential FPIR/FEIR were the results of a study showing that transit user travel patterns at the Prudential Center have changed since the Orange Line opened in 1987. Some Green Line users have shifted to service provided by the Orange Line expansion. Therefore, the future Prudential Redevelopment Green Line use may be lower than the projected demand in the design year.

It was recommended in the DPIR/DEIR that Olmsted Plaza Associates should coordinate with the MASCO shuttle bus service by not only utilizing the existing service, but also by contributing to the expansion of the service. Further study has determined that the developers should coordinate with MASCO to provide additional service to the Orange Line

(Ruggles Station), and increase its service to the Red Line (Harvard Square Station) during peak periods. These additional services will increase the transit supply to students and employees along these routes. Meanwhile, it could reduce the Green Line inbound demand by 15 percent. This reduction is estimated based upon the number of site transit users to the Orange Line northbound and Red Line/Harvard Square direction via the Green Line. These riders will use the shuttle bus service provided by the site, instead of transferring through the Green Line.

3.5.2 Means For Improving Public Transportation Service

A general mitigation plan for improving Green Line operations was included in the DPIR/DEIR. In this section, a refined improvement plan is presented to detail the required efforts in improving public transportation operations.

1. Measures to increase public transit capacity.

    - The MBTA should be encouraged to maintain its schedules and reduce significant headway fluctuations. The proposed automatic vehicle identification system will aid in reaching this goal.

    - The MBTA should increase the average number of cars from 2.0 per train to 2.3 per train with the same headways at the earliest possible time. The new rolling stock should make this feasible.

    - A crossover switch at Fenway Park Station to allow turn-around will increase train utilization during peak periods. Implementation of this plan should take place prior to the completion of Olmsted Plaza since final design plans are ready for contractor bid.

    - The developer can jointly work with MASCO to expand the existing MASCO shuttle service into a broader network, which will directly increase the public transit supply. Such expansion would include adding service to Ruggles Station, and increased service frequency to Cambridge during peak periods.

2. Promote Public Transit

- The developers will establish a permanent position on-site to coordinate public transit use for commuters. The coordinator will:
    - Promote MBTA transit services by updating service schedules and providing a MBTA monthly pass sales program.
    - Conduct "Transportation Awareness Days" every 6 months to inform employees of the public transportation services available to them.
    - Establish a computer data base to coordinate carpool and vanpool ridesharing programs.
    - Work with other public and private agencies and citizens in the area to expand public transit service and ridesharing programs areawide.
    - Directly work with the on-site parking management group on all parking related issues and examine the increased use of public transit as part of possible solutions.
    - MASCO has obtained the TMO funding to establish an areawide Transportation Management Organization in the Longwood Medical Area. Olmsted Plaza Associates will work directly with MASCO on the TMO program to strengthen its serviceability by including the site's transportation coordinator's activities into the program and contributing to the cost of additional equipment and resources.
- In order to pursue the promotion of public transit use on the site, the developers should reach agreement with tenant employers on the following objectives:

  - Employers should subsidize their employees purchase of MBTA transit monthly passes at the rate of 25 percent or more. However, the benefited employees should not receive employee parking privileges in the garage.

  - Employers should contribute to the cost of local shuttle bus services provided by employers or other organizations.

  - Employers should contribute to the cost of vanpool and other alternative ride-sharing programs for the employees.

The above mitigation strategies can be very effective if included in the leasing agreement.

- The developers should encourage its tenants to adopt staggered working hours in return for lower utility rate incentives. Staggered working schedules will reduce peak hour traffic demand.

- Continuous coordination with the City of Boston and other related public agencies to monitor and report on its mitigation effectiveness.

3.5.3 Developer's Commitment to Mitigation Plans

- Instituting a Comprehensive Commuter Mobility Program on the site to maximize the use of mass transit and ridesharing; making the program available to all workers in the area by means of cooperation with other businesses and institutions.

- Designating a transportation coordinator who shall cooperate with BTD to monitor the progress of mitigation plans, and implement the Commuter Mobility Program.

- The Commuter Mobility Program shall provide the following services:

  1) Coordinating ridesharing programs;
  2) Promote transportation options through newsletters, special events, and tenant relations;
  3) Manage on-site MBTA pass sales.
  4) Encourage tenants to implement staggered work schedules;
  5) Manage all parking issues;
  6) Monitor efforts of Commuter Mobility Program and submit annual report to the BTD.

- The Developer will promote ridesharing programs by:

  1) Provide computerized on-site carpool/vanpool matching programs;
  2) Participate in on-site and area wide ridesharing programs;
  3) Provide ridesharing promotional material to site employees every six months.
  4) Reserve parking spaces for carpool/vanpool vehicles registered with the Transportation coordinator at a 50% discount;
  5) Provide "Transportation Day" once a year to expand ridesharing programs.

- Developer will implement transit use enforcement in the base agreement to minimize site trip generation.

- Developer will provide improved access to the Fenway Park Station.

In order to assure the developer's responsibilities in mitigating the site impact to the Green Line operations, a meeting was held by the MBTA officials with the developer and developer's technical consulting team on November 11, 1989. The developer has agreed to contribute financially to the Fenway Park Station improvement costs. The detail of the improvement plans are currently being discussed.

3.6 Pedestrian Circulation

3.6.1 Operations

The analyses of pedestrian circulation under existing and future conditions within the study area as presented in the DPIR/DEIR provided an analysis of pedestrian flow conditions within the study area. Due to a number of changes in the project's parking system and traffic flow, some changes in the future pedestrian flow network have also occurred. These changes and their affect on future pedestrian flow are analyzed in this section. In addition, some of the concerns and issues raised by the local neighborhood groups regarding the pedestrian flow system in the area are also evaluated in detail.

It is proposed that two garages, one on the main site and another on Van Ness Street, provide the necessary parking for the project rather than the one garage at the site as originally proposed in the DPIR/DEIR. This change will ultimately add more pedestrian trips to the Brookline Avenue/Fullerton Street intersection during peak hours. This is mainly due to the fact that motorists who park at the Van Ness Street garage need to walk between the site and the garage. The increase in the total number of pedestrians crossing the Brookline Avenue and Fullerton Street intersection during the morning and evening peak hours is summarized in Table 3-16. In addition, the LOS for the new pedestrian volumes was also analyzed and the results are included in the table. As shown in the table, the increase in pedestrian volume has resulted in a decrease in LOS during the AM peak hour. The pedestrian network, with site generated AM and PM peak hour volumes, is graphically presented in Figures 3-21 and 3-22.

The decision to use the Emerald Necklace missing link parcel as a temporary parking lot from 1990 to 1991 will require a pedestrian crosswalk between the parcel and the Park Drive sidewalk in front of the site entrance. An existing traffic stop line is located on Park Drive northbound at the Sears Building main entrance. The pedestrian crosswalk can will located at this location. When traffic stops for the red light at the stop line, pedestrians can cross safely. The new traffic signal and pedestrian signal heads will provide a signalized crosswalk at this intersection.

Another concern of the local community is that the blind spot at the crest of Park Drive near the bridge over Fenway Park Station causes a dangerous condition for pedestrians crossing Park Drive at this location. Based on the site survey results, a pedestrian crosswalk will be painted at the crest across Park Drive, and pedestrian crossing warning signs will be installed along both sides of Park Drive to increase the awareness of motorists in the area.

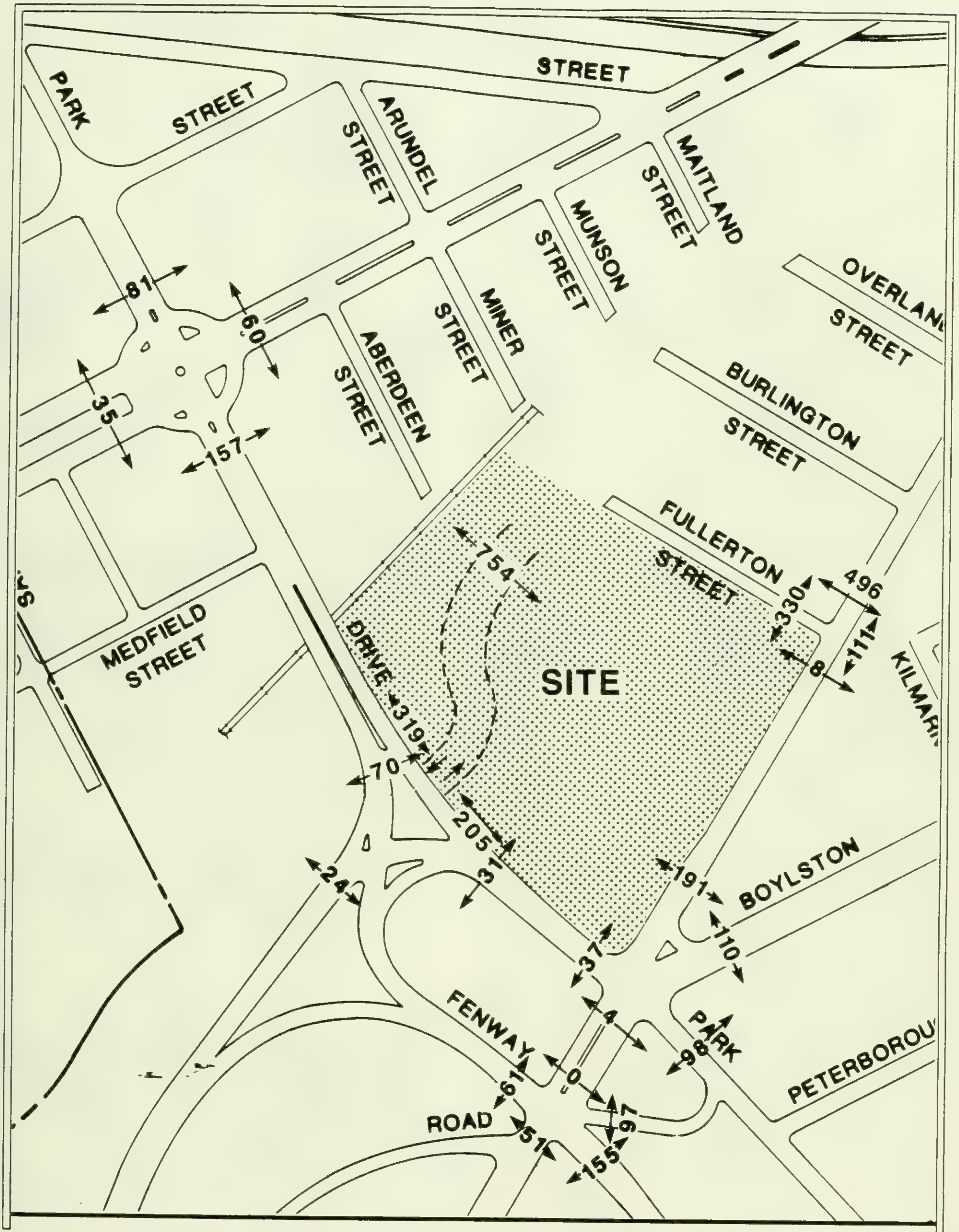

FIGURE 3-21
BUILD AM PEAK HOUR PEDESTRIAN VOLUMES -1995

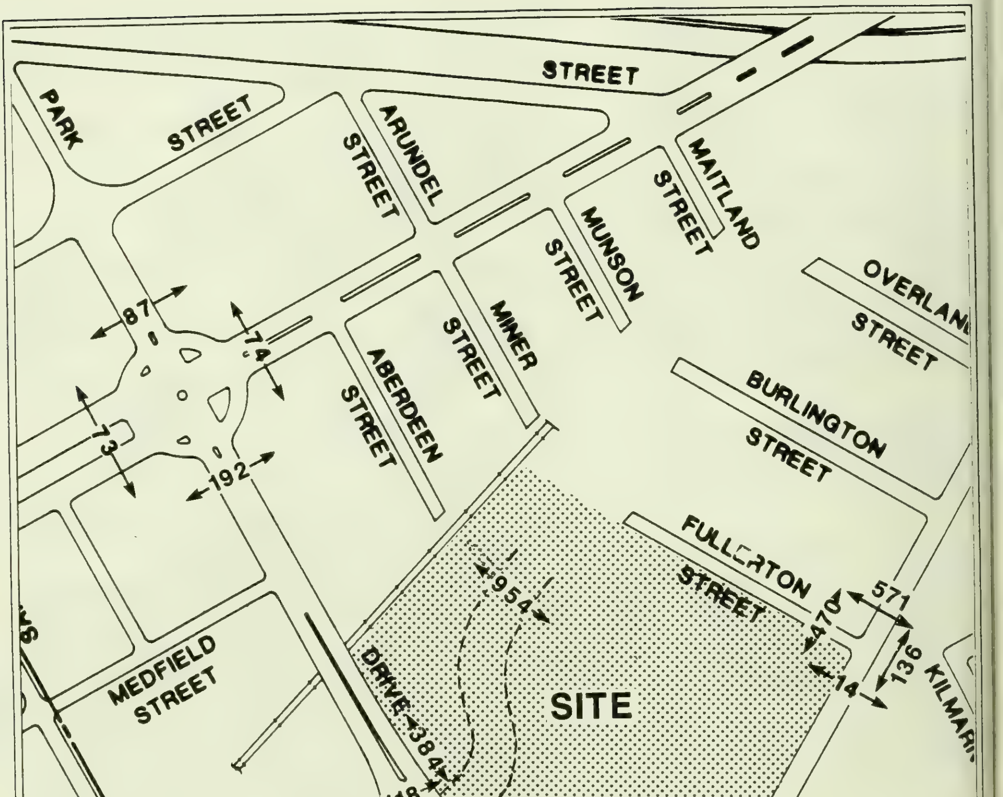

FIGURE 3-22
BUILD PM PEAK HOUR PEDESTRIAN VOLUMES -1995

TABLE 3-16

PEDESTRIAN FLOW VOLUMES AND LOS SUMMARY AT BROOKLINE/FULLERTON INTERSECTION

	Pedestrian Volume		LOS (Average)	
Option	AM Peak Hour	PM Peak Hour	AM	PM
One Garage (DPIR/DEIR)	71*/237**	98/199	A*/B**	A/B
Two Garages (FPIR/FEIR)	330/496	470/571	B/B	A/B

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* Fullerton Street Crosswalk

** Brookline Avenue Crosswalk

3.6.2 Means for Enhancing Pedestrian Network Improvement

The improvement plan is focused on providing an efficient and safe pedestrian flow network.

- With the two garage scenario, the peak hour pedestrian volume at the intersection of Brookline Avenue and Fullerton Street will be doubled. Pedestrian crossing signs along Brookline Avenue near Fullerton Street will be installed, and crosswalk pavement markings at this intersection will be striped to increase pedestrian safety.

- A pedestrian crosswalk will be painted on Park Drive over Fenway Park Station. This crosswalk location will be approximately 550' south of Audubon Circle at the crest of Park Drive. Advance pedestrian crossing warning signs are required for this crosswalk.

- Current walkways surrounding the project site will be upgraded as reported in the DPIR/DEIR.

- Pedestrian walkways to Fenway Park Station will be upgraded in coordination with the MBTA. The developer will contribute to the cost required to upgrade the pedestrian environment around the MBTA station, including escalator installation and side bench placement in the station.

- In coordination with the Boston Transportation Department, the signal timing for pedestrian phases at the signalized intersections will be calibrated based upon the future demand.

3.6.3 Developer's Commitment to Pedestrian Network Mitigations

In order to enhance the pedestrian network improvement plan, the developer has committed to financially contributing to the improvement programs, including:

1. Providing a desirable walkway from the project site to Fenway Park Station;

2. Providing handicapped access to the site buildings;

3. Rebuilding the sidewalk surrounding the project site, including new pavement, landscaping and street lighting;

4. Rebuilding or improving pedestrian crosswalks within the study area in conjunction with traffic mitigation plans.

Locations of the proposed crosswalks are shown on Figures 3-14 through 3-20.

3.7 Parking

In the DPIR/DEIR, the complete analyses of the existing parking system within the study area and the evaluation of the future parking conditions provided adequate information for the understanding of the project impacts on the surrounding parking system. Along with the parking system analyses, future parking system mitigation plans were also proposed, with the focus on encouraging carpooling and transit use, and discouraging single occupancy commuters.

However, the proposed site parking supply has been changed from one on-site garage, to two garages; one on the site and one on Van Ness Street. Although the proposed change will not affect the overall parking supply and management plans proposed for the project in the DPIR/DEIR, some details in the supply and management plans should be re-examined to ensure that the parking system will be consistent with the one originally proposed.

Based on the new supply plan, the parking system mitigation plans were refined to emphasize the developer's commitment to reduce site traffic generation by implementing effective parking management plans.

3.7.1 Operations

The two garage option will provide a total of 1649 spaces, including 1150 spaces in the 6-level garage on-site, and 499 spaces in the 5-level garage on Van Ness Street. These spaces are designed with a standard parking stall size of 8.5' x 20.0'. Since the developer has committed the garages to serve daily office parkers, nighttime residential parking, and Red Sox game parking, the parking supply and management plans are focused on two time periods, the daily site demand between 7 AM and 6 PM, and the local residential demand and/or Red Sox game demand between 5 PM and 9 AM.

The proposed garage at Van Ness Street is designated for employees' long-term parking only. Any short-term demand by the project will be accommodated at the on-site garage. The detail of the space allocation plan is summarized in Table 3-17.

As shown in the table, 295 spaces are designated for short-term parking in the garage on the site. Of these spaces, 10 spaces are reserved for handicapped parking only, which complies with the requirements set forth by the MDPW. These handicapped parking spaces will be located on the first level of each garage, and will have direct access to the surrounding area. Among the designated long-term parking spaces, twenty-five percent of the spaces are designated for carpool parking, and two percent of the spaces are designated for vanpool parking in both garages. These spaces will be assigned with appropriate signing. The new parking supply plan is consistent with the parking supply requirement determined in the DPIR/DEIR.

Regarding the use of these two garages to relieve local resident parking deficiencies in the evening, and to accommodate Red Sox game parking demand during game season, the following plan has been proposed. Resident parking in the parking facilities will be allowed with a pre-approved permit between 5 PM and 9 AM on weekdays, and entire weekends. However, if the local resident's car is not removed from the facilities before 9 AM, regular parking fees for the short-term parking will be assessed. Based on the parking demand estimate in the DPIR/DEIR, the site demand at 6 PM is approximately 620 spaces. At that point, 1029 spaces would be available for either resident parking or Red Sox game uses. It is difficult to estimate how many local residents will use the facilities. This depends on the cost and the demand when the project is completed. Currently, there are 243 spaces designated for resident parking within the study area. Based upon this supply, the resident parking demand for the garages will not be greater than the 243 spaces provided on the street. The actual demand can only be determined through the number of resident parking permits being purchased. Therefore, if the parking garages are provided for baseball game parking, the number of residential parking spaces reserved should coincide with the number of permits purchased. The remaining spaces can be used for baseball game parking.

The revised parking supply plan includes the reopening of the currently vacant parking lot at the Emerald Necklace Missing Link parcel beginning in 1990 for a 24 month period. This parking lot can provide 288 spaces. These spaces can be used to accommodate the current local demand for parking. The explicit parking management plans including the pricing and policies are presented in the mitigation section.

TABLE 3-17

PARKING SPACE ALLOCATION

Use	On-site Garage	Van Ness Garage
Short Term Spaces:	Levels B, 1, 2	Level 1
Handicapped Reserve	10 (Level 1)	5 (Level 1)
Regular Use	285	0
Long Term Spaces:	Levels 3-6	Levels B-5
Handicapped Reserve	0	0
Carpool Reserve	214 (Level 3)	125 (Level B, 1 & 2)
Vanpool Reserve	17 (Level 3)	10 (Level 1)
Regular Use	624 (Level 4-6)	364 (Level 3-5)
TOTAL	1150	499

TABLE 3-18

PARKING FEE SURVEY SUMMARY

LOCATION	FEE STRUCTURE
1. Sear's Lot at Fullerton Street	$4.00/day, flat fee $10.00/night, ball game parking
2. LMA Lot at Brookline Avenue	Monthly permit only - $120.00/month $8.00/night, ball game parking
3. LAZ Lot at Ipswich Road	$5.00/day, flat fee $10.00/night, ball game parking
4. Parking Service Lot at Van Ness Street	$4.00/day, flat fee $10.00/night, ball game parking
5. Stanhope Lot at Van Ness Street	$4.00/day, flat fee $10.00/night, ball game parking
6. Stanhope Lot at Peterborough Street	$4.00/day, flat fee $10.00/night, ball game parking
7. HCHP	$3.00/per visit, flat fee Monthly pass N/A
8. Children's Hospital	$2.50/hour with $1.00 hour increment ($12.00 maximum Monthly pass - $160.00 per permit
9. Pilgrim Garage	$3.00/hour with $1.00/hour increment ($14.00 maximum Monthly pass - $160.00 per permit
10. Beth Israel Hospital Garage	$2.50/hour with $1.00 increment ($12.00 maximum)

- Emerald Necklace parking lot fee:

  $4.00 per day flat fee, or
  $120.00 monthly permit

  - The long-term parking space fee:

    Regular Monthly Permit - $160.00
    Vanpool and carpool - $112.00
    Resident Parking Monthly Permit - $60.00

  - Snow-day emergency parking: $4.00 per use

These fee structures are based on the 1989 dollar values. The actual charge in the design year will be adjusted to reflect the actual dollar value in that year.

4.0 HOUSING IMPACT SUMMARY

This study identifies potential housing impacts and recommended mitigation measures relative to the proposed Olmsted Plaza development. The objective is to present such information within the context of an overall Fenway/Kenmore neighborhood housing strategy, which is divided into three parts as follows:

1. Identification of Primary and Secondary Housing Impacts

   The consultants have used the same methodology and assumptions that were developed in the Draft Housing Impact Report for the Prudential Center Redevelopment Project in order to estimate the potential combined direct, indirect and induced housing demand on the Fenway/Kenmore impact area.

   Consultants' housing impact estimate of 147 households is based on the project proposed at the time of this analysis. It includes approximately 132,000 n.s.f. of retail-related space, 870,000 n.s.f. of office-related space, and a 300-room hotel (ALTERNATIVE A).

2. Current Housing Conditions and Demographic Patterns

   Consultants have collected and analyzed all available data, both "hard" (quantitative) and "soft" (interviews, perceptions), on housing types and costs, as well as household income, to estimate some measure of the current affordable housing "deficit" in the impact area.

   The generalized estimates relating income and housing cost, suggest an "Affordability Gap" which would require the median household income to nearly double in order to afford the median rent or condo sales price in the Fenway/Kenmore district.

3. Recommended Fenway/Kenmore Neighborhood Housing Strategy

   Based on suggested goals, the consultants have developed recommendations which reflect an understanding of local needs and problems, as perceived by those familiar with the neighborhood and supported by available data.

The City of Boston's linkage policy requires developers of large commercial projects to either build affordable housing by choosing the Housing Creation Option, or to contribute money to the Neighborhood Housing Trust for such purposes.

The amount of the housing linkage obligation is calculated at $5 for every square foot over 100,000 square feet.

A development program of 1.446 million gross square feet, as proposed for Olmsted Plaza, will generate a housing linkage obligation of $6.730 million.

Although the city's linkage program is designed to invest in affordable housing opportunities in the city's neighborhoods; to date, no linkage projects are underway in the Fenway/Kenmore area.

Thus, it is recommended that three critically important projects receive highest priority for linkage funds.

- Boston University properties at Audubon Circle; for reuse as affordable SRO housing units.
- Boston University properties - second phase; for reuse as a limited equity cooperative.
- Peterborough Street parcel; for development of mixed income housing.

In addition, the housing study has discussed other possible strategies such as possible acquisition and/or reuse of underutilized parcels along the Boylston/Brookline Corridor, and corporate equity-sharing for affordable housing.

5.0 EMPLOYMENT IMPACT SUMMARY

The jobs linkage funds generated through the Olmsted Plaza development offer a unique opportunity to create new economic opportunities for the residents of the City of Boston, particularly those in the Mission Hill and Fenway neighborhoods. This linkage strategy builds upon one of the key strengths of the Boston economy -- the health care institutions and the biomedical research occurring in both the private and non-profit sectors. By matching the needs of local residents with the needs of employers in these growing fields, the jobs linkage strategy will provide quality jobs to low-and moderate-income residents of the city and add to the competitive advantages of Boston as a site for further growth in the biomedical fields.

5.1 Results of Research on Economic Needs

The job linkage strategy for Olmsted Plaza was designed to match the employment needs of local residents with the labor force needs of local employers. To ensure that the study addressed the needs of prospective employers at the site and Community members, Mt. Auburn Associates surveyed residents of Mission Hill and the Fenway, interviewed human service providers, surveyed local employers and analyzed employment needs in the biomedical industry.

The community survey revealed that Mission Hill and the Fenway are extremely diverse neighborhoods, with residents ranging from highly-skilled, upper-and middle-income professionals to low-income welfare families, who have not participated in Boston's general prosperity over the past decade. Unemployment remains relatively low in the community, but underemployment and economic instability are major concerns of community residents.

The analysis of employment needs highlighted the importance of institutional employers such as universities and hospitals. Interviews indicated that job opportunities were available for high-quality clerical areas and specialized health care occupations. The analysis of employment in the biomedical research field, a target industry for the Olmsted Plaza development, found that continued industry growth would lead to a demand for a wide variety of jobs. Although a large share of jobs in the industry will go to highly trained scientists, there is also need for supporting laboratory technicians which require only Bachelor of Science or Associates Degrees.

5.2 The Job Linkage Strategy

In a period of scarce resources, the jobs linkage funds generated through the development of Olmsted Plaza will provide an opportunity to fill some of the gaps in the education and training system in the city. Because the Fenway and Mission Hill neighborhoods are adjacent to the Longwood Medical Area and because Olmsted Plaza will target biomedical research firms as tenants, opportunities in health-related professions is the natural focus for job training efforts using linkage funds. Shortages and increased training requirements in certain health care occupations will result in the expansion of training in the health care field, and will benefit residents of the Fenway and Mission Hill neighborhoods, the medical institutions themselves, and, less directly, residents throughout the city.

The following principles guided the development of the strategy:

1. Linkage funds should be a vehicle for developing new, collaborative relationships which overcome the fragmentation of existing initiatives designed to link residents with jobs in health-related occupations.

2. Linkage funds should be used to provide the seed funding needed to bring together neighborhood groups, city officials, health care and biotechnology representatives, and educators to address in a coordinated fashion gaps in health-related training. By demonstrating commitment and starting the process, seed funding will help attract additional resources, such as foundation grants, for the effort.

3. Linkage fund commitments should strike a balance between immediate responses to current training needs and efforts to build the long-term capacity of Boston's training system for local residents.

The creation of the Boston Health Careers Academy is the major initiative which should be supported with linkage funds. Discussed with interest by the city and leaders in the health care industry, the academy would train high school students and dropouts, working parents, and the unemployed for entry into occupations in the health care field. The Academy would be a central, organizing institution for a range of programs including English-as-a-Second-Language and literacy for the health professions, specialized curriculum in high-demand occupations, a public relations campaign which promotes health care as a profession, and retaining and skill upgrading for existing workers in the field.

Linkage funds can seed this effort. A task force made up of leaders in the health care and biomedical research industries, city officials, training providers, neighborhood residents and, particularly, the Conference of Boston Teaching Hospitals, could direct linkage funds to finance an implementation plan for the Academy and to establish a few pilot projects at Dimock Community Health Center, the Humphrey Occupational Center, or Roxbury Community College. In addition, funds could be used to continue support for existing programs such as the collaborative effort between Children's Hospital and the Fenway Program of Boston English High School.

A second major proposed initiative is the establishment of a "biomedical occupational endowment" for the Fenway and Mission Hill neighborhoods. Linkage funds could be used to help qualified local residents gain access to specialized biomedical training. The endowment would buy slots for local residents, through a competitive process, at the innovative biomedical training program operated by Boston University's Metropolitan College.

A third major initiative, unrelated to the biomedical fields, would be to provide an innovative child care training program in conjunction with the Child-Care Training and Internship Program at Wheelock College. The program being developed by Wheelock College, less than one block from the Sears site, could be operated in conjunction with the child care center being proposed for Olmsted Plaza. The program seeks to provide opportunities for neighborhood residents interested in entering the child care field.

6.0 INFRASTRUCTURE SYSTEMS

6.1 Introduction

Because the proposed redevelopment can potentially affect local infrastructure systems, this report was prepared to address the infrastructure impact issues and present mitigative alternatives.

The infrastructure impact analysis for the proposed redevelopment is primarily based on the characteristic utility demand projections for both the historic use of the Sears facility and the proposed redevelopment program with comparison of the 300-room hotel design and a 309,000 square foot office building alternatives proposed on Brookline Avenue. This approach was taken to provide an understanding of the historical demand placed on the infrastructure systems by the Sears facility, and to serve as a guideline for determining the impact of the redevelopment.

The calculations in this section are based on a development of 1,546,000 gsf. The final development size will actually be 1,446,000. Therefore, the calculations included here are extremely conservative, and can be assumed to be 6.5% or more greater than expected.

The following sections describe the existing infrastructure systems and their capacity to serve the proposed project. Expected utility use levels for each infrastructure element are presented, and estimates are made for the increased demands associated with each space category in the proposed project. For each infrastructure element, the impact of the increased demands on the system is discussed and service connection information is provided. Planned infrastructure system improvements and mitigation efforts to moderate the impact of the project are also presented.

This report addresses the impacts of the proposed project on the following infrastructure systems:

- Water Distribution,
- Wastewater Disposal,
- Storm Drainage,
- Electric Service, and
- Natural Gas Service.

6.2 Water Distribution Systems

This section presents an analysis of the proposed Olmsted Plaza project's anticipated impact on existing water supply facilities. The analysis includes a description of existing facilities, an estimate of future water use, and an evaluation of the existing facilities' adequacy to handle the increased demand.

6.2.1 Description of Existing Facilities

Water service for domestic use and fire protection in the project vicinity is supplied from a water system owned and operated by the Boston Water and Sewer Commission (BWSC). This system is part of the BWSC Southern Low Service (SLS) supply system. In the project area the SLS is used primarily to meet domestic water needs, internal building system fire protection requirements, and street hydrant demand.

Domestic water service is provided to the main Sears building through one connection to a 12" water main of the SLS water system located in Brookline Avenue and Park Drive. The existing fire protection water service for the Sears facility is provided through eight separate connections from the same service. Figure 6.2-1 details the location of water mains within the project area.

6.2.2 Capacity of Existing Facilities

Discussions with BWSC personnel and recent system-wide studies of hydrant flow tests performed by BWSC indicate that flow and pressure appear to be adequate to serve the development's domestic water and fire fighting requirements. Hydrant flow tests in the site vicinity are summarized in Table 6.2-1. These show that system capacity is available to serve the developments peak demand of 388 gpm. Additionally, the typical fire requirements of 2000 gpm can be met at the site.

6.2.3 Water Usage

The Massachusetts State Environmental Code, 310 CMR 15.00, Title V, Sewage Flow Estimates (Title V) was utilized as a standard system for estimating historical and future water usage. It should be noted that the Title V approach generally provides a conservative estimate of average daily water consumption and that Title V values were increased by 10% to account for comsumptive uses. Peak use values were determined by applying a peaking factor of 3 to the average daily use.

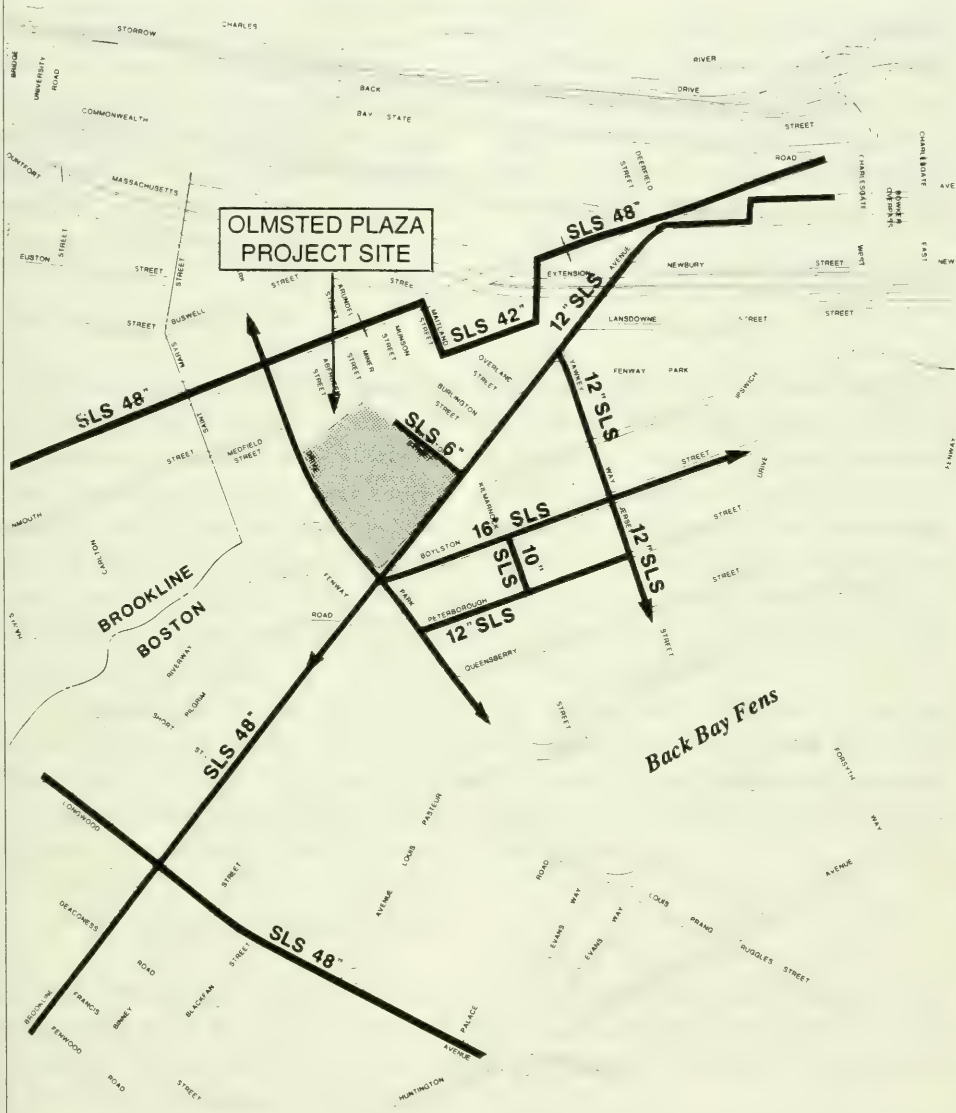

FIGURE 6.2-1
WATER MAIN LOCATIONS

TABLE 6.2-1

HYDRANT FLOW TESTS*

Street/ Location	Service	Test Date	Static Pressure	Flow (gpm) @ Residual Pressure	Flow (gpm) @ Residual Pressure of 20 psi**
Brookline Ave. near Park Drive	SLS 12"	4/86	62 psi	1740 @ 50 psi	3430
Pasteur near Fenway	SLS 12"	6/88	62 psi	2642 @ 54 psi	6464

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* Test data obtained from BWSC, Boston, MA.

** Calculated by BWSC, Boston, MA.

Historical Usage

Historical average daily water use levels for the existing Sears facility have been estimated based on the peak staff level of 3,000. It should be noted that the estimated peak air conditioning make-up water use of 7,560 gallons per day (gpd) is seasonal and has been based on the size of the existing cooling tower. Average domestic usage was estimated to be approximately 66,000 gpd with an instantaneous peak of 138 gpm. This resulted in an average total use during the summer, under peak cooling conditions, of 73,560 gpd with a total instantaneous peak of 143 gpm.

Proposed Development

Water use projections for Olmsted Plaza are reported in Table 6.2-2 and 6.2.2a. The information is based on Title V data and organized into the general use categories of office, conference center, retail, R & D, day care, clinical, job training center, storage, hotel and athletic club. Average daily domestic water use with the hotel alternative (which represents a greater demand than the office alternative) has been estimated as 143,855 gpd, with an instantaneous peak of 258 gpm, this represents an increase in domestic water use of 187%. Seasonal peak cooling water demand has been estimated as 73,250 gpd. This results in a total estimated summertime water use of 217,105 gpd, with an instantaneous peak of 301 gpm, representing a 210% increase in total use.

Water requirements for fire fighting will remain essentially unchanged for the new development because potential fire fighting scenarios remain the same. As with the existing facility, water to satisfy fire fighting needs will be supplied by local hydrants and individual structure dedicated piping systems such as stand pipes and sprinkler systems. New code standards require sprinkler systems in all new high rise structures.

6.2.4 Impacts and System Connections

The Olmsted Plaza development will be responsible for a maximum estimated increase in summertime water use of 119,725 gpd which will be moderated by the effects of water conservation components to be utilized in the building designs, and retrofits. This estimated requirement will be supplied by the SLS system.

Discussions with BWSC personnel indicate that the existing supply and distribuiton system is capable of supplying sufficient water to satisfy the estimated additional demand. The agency assurance is supported by the hydrant test data presented in Table 6.2-1. The existing

TABLE 6.2-2

AVERAGE DAILY WATER USE FOR THE PROPOSED OLMSTED PLAZA

(DOMESTIC USE BASED ON TITLE 5 DATA)

BROOKLINE AVE HOTEL ALTERNATIVE

Structure	Use Category	Area (gsf)	Average Domestic (gpd)	Peak Cooling* (gpd)	Total Use (gpd)
Main Building					
	Clinical	158,540	13,080	7,925	21,005
	Office	236,208	19,500	11,800	31,300
	R & D	523,517	43,200	26,175	69,375
	Retail	60,880	3,350	3,350	6,700
	Day Care	10,147	1,885	250	2,135
	Athletic Club	31,708	8,720	950	9,670
	Subtotals	1,021,000	89,735	50,450	140,185
Park Drive					
	Office	216,000	17,820	10,800	28,620
Brookline Avenue					
	Hotel (300-room)	309,000	36,300	12,000	48,300
	Totals	1,546,000	143,855	73,250	217,105

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* Summer Use Only.

TABLE 6.2-2a

AVERAGE DAILY WATER USE FOR THE PROPOSED OLMSTED PLAZA

(DOMESTIC USE BASED ON TITLE 5 DATA)

BROOKLINE AVE OFFICE ALTERNATIVE

Structure	Use Category	Area (gsf)	Average Domestic (gpd)	Peak Cooling* (gpd)	Total Use (gpd)
Main Building					
	Clinical	158,540	13,080	7,925	21,005
	Office	236,208	19,500	11,800	31,300
	R & D	523,517	43,200	26,175	69,375
	Retail	60,880	3,350	3,350	6,700
	Day Care	10,147	1,885	250	2,135
	Athletic Club	31,708	8,720	950	9,670
	Subtotals	1,021,000	89,735	50,450	140,185
Park Drive					
	Office	216,000	17,820	10,800	28,620
Brookline Avenue					
	Office	309,000	25,510	15,435	40,945
	Totals	1,546,000	133,065	76,685	209,750

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* Summer Use Only.

SLS has an available capacity of 1,740 gpm at 50 psi. For fire flow the existing SLS has an available capacity of 3,430 gpm at 20 psi.

Service to the proposed new structures will be provided by the construction of separate service connections to the BWSC distribution system in adjacent roadways, with new distribution systems developed on site for each of the major elements of the project. Modifications to existing service connections, construction of new service connections, and system improvements will be incorporated into the general build out schedule for Olmsted Plaza to minimize impacts on adjacent roadways. All modifications to existing systems and construction of new systems will be in accordance with BWSC standards and practices.

6.2.5 System Improvements and Mitigation Measures

The new development systems requiring water supply will either meet or be an improvement beyond the Massachusetts 780 CMR State Building Code requirements designed to minimize water use. Building design features to reduce water use will include new water saving fixtures, such as low flow showers, low volume flush systems, and automatic shutoff lavatory sink faucets. These efforts will result in an expected savings in water use relative to standard systems of approximately 15%. Water conservation measures to be considered out of doors will include xeroscaping, water absorbing polymer soil additives, and irrigation controls.

6.3 Sewer and Storm Drain Systems

6.3.1 Sanitary Sewers

Description of Existing Facilities

The Olmsted Plaza sanitary wastewater and storm water runoff collection systems are separate on the site and discharge to separate systems off-site. As shown in Figures 6.3-1 and 6.3-2 the Olmsted Plaza project site is served by a separate local sanitary sewer that is owned and operated by the Boston Water and Sewer Commission (BWSC). The existing Sears facility is serviced by a 15" cast iron connection with the 24" X 31" brick sewer located in Brookline Avenue. This sewer carries flows southwesterly along Brookline Avenue, across Park Drive and the proposed Emerald Necklace Park, to the Massachusetts Water Resources Authority's (MWRA) Charles River Valley Sewer. This interceptor carries flows in a generally southeasterly direction, along the Fenway and Vancouver Street, to the Ward Street Headworks. From there, the Boston Main Drainage Tunnel conveys flows to the Deer Island Treatment

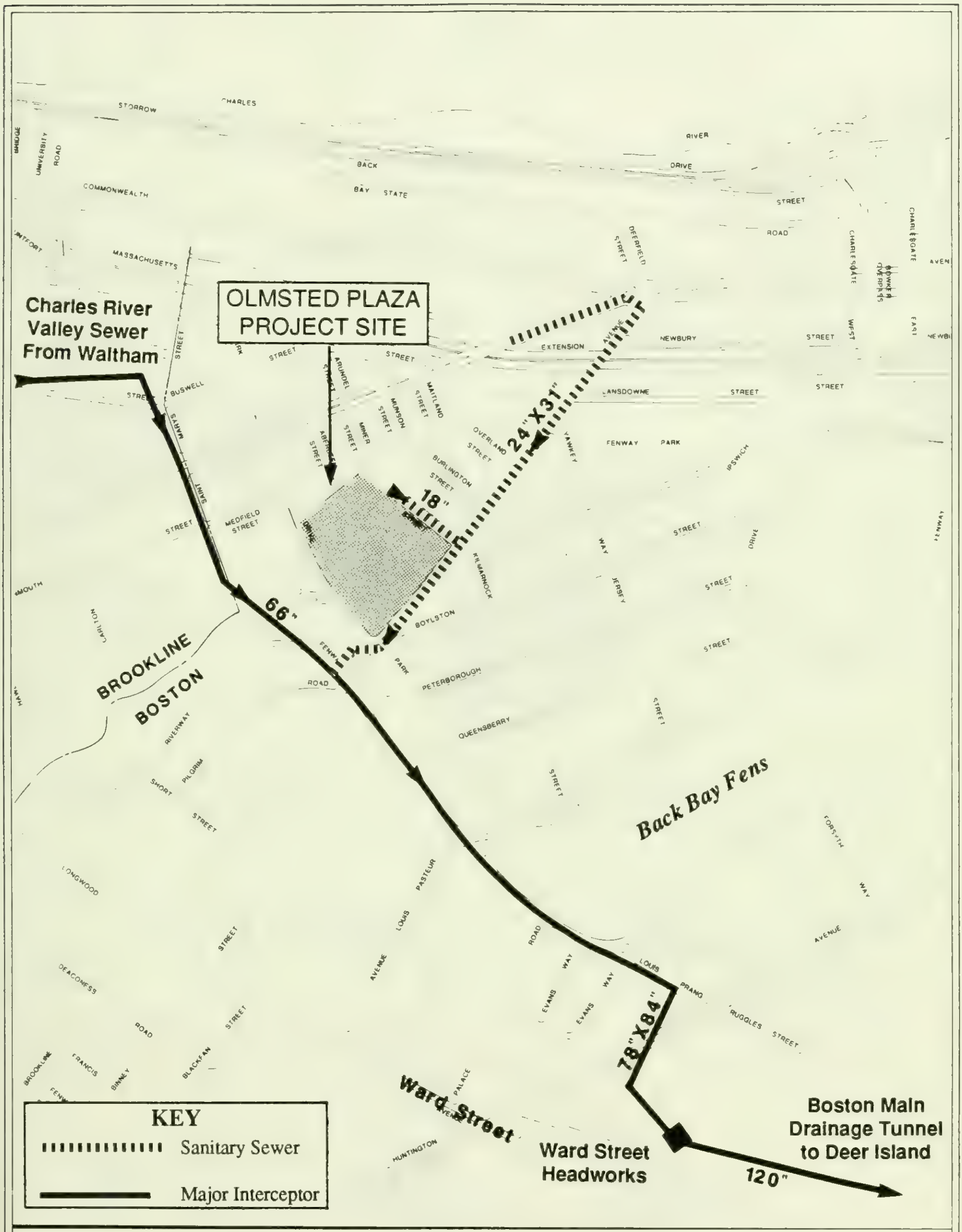

FIGURE 7.3-2
EXISTING LOCAL SEWER SYSTEM

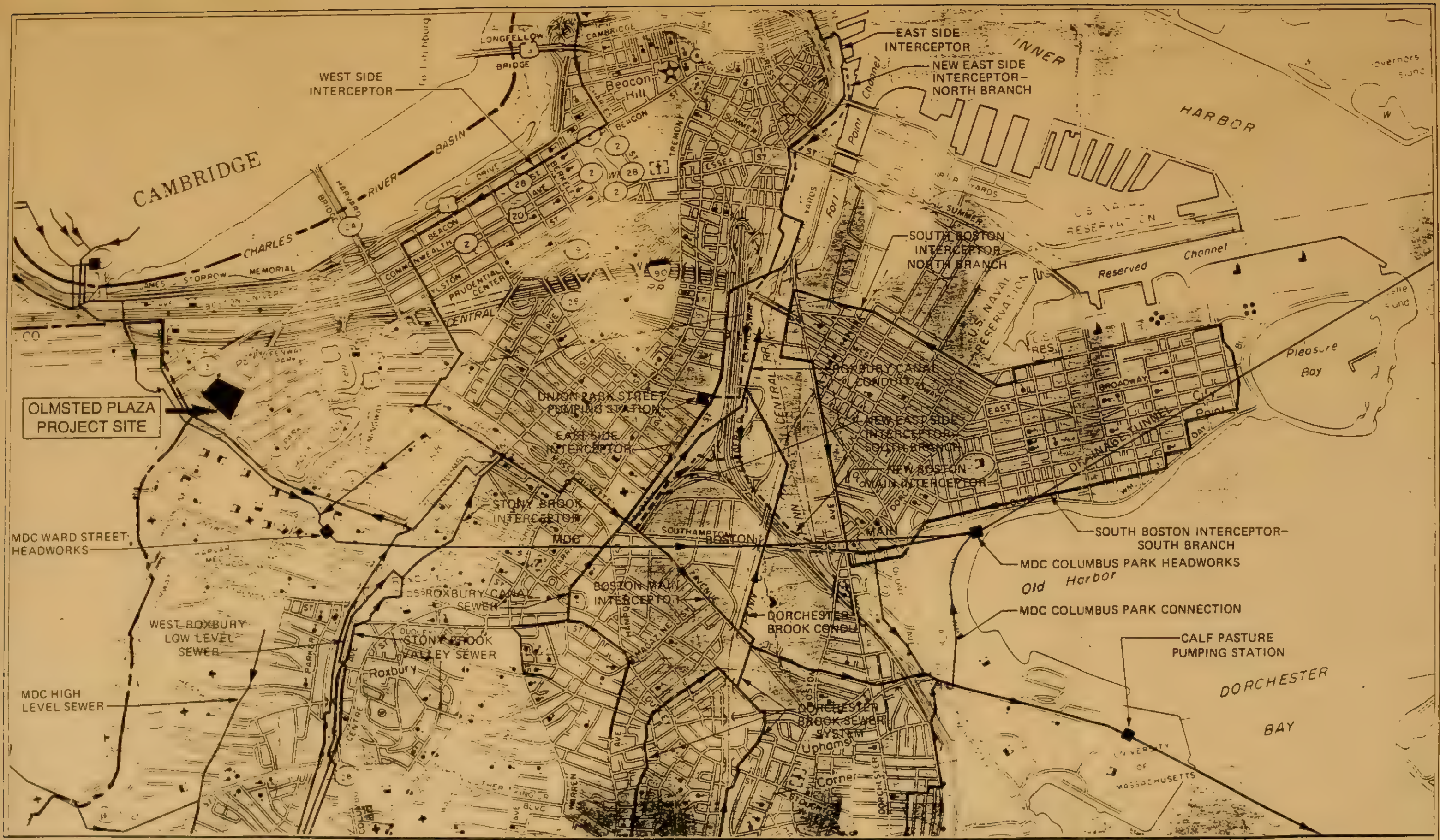
EAST SIDE INTERCEPTOR
NEW EAST SIDE INTERCEPTOR–NORTH BRANCH
WEST SIDE INTERCEPTOR
INNER HARBOR
CAMBRIDGE
CHARLES RIVER BASIN
Beacon Hill
SOUTH BOSTON INTERCEPTOR NORTH BRANCH
Reserved Channel
U.S. NAVAL RESERVATION
Pleasure Bay
OLMSTED PLAZA PROJECT SITE
UNION PARK STREET PUMPING STATION
ROXBURY CANAL CONDUIT
EAST SIDE INTERCEPTOR
NEW EAST SIDE INTERCEPTOR–SOUTH BRANCH
NEW BOSTON MAIN INTERCEPTOR
STONY BROOK INTERCEPTOR
MDC
BOSTON
MDC WARD STREET HEADWORKS
SOUTH BOSTON INTERCEPTOR–SOUTH BRANCH
MDC COLUMBUS PARK HEADWORKS
Old Harbor
ROXBURY CANAL SEWER
BOSTON MAIN INTERCEPTOR
DORCHESTER BROOK CONDUIT
MDC COLUMBUS PARK CONNECTION
WEST ROXBURY LOW LEVEL SEWER
STONY BROOK VALLEY SEWER
Roxbury
CALF PASTURE PUMPING STATION
DORCHESTER BAY
MDC HIGH LEVEL SEWER
DORCHESTER BROOK SEWER SYSTEM
Uphams Corner
UNIVERSITY OF MASSACHUSETTS

FIGURE 6.3-2
OLMSTED PLAZA - MAJOR INTERCEPTORS
PROJECT SITE TO DEER ISLAND

Plant. At Deer Island, wastewater currently receives primary treatment and chlorination before discharge to Boston Harbor at President's Road.

Capacity Evaluation - Existing Facilities

A capacity evaluation has been made of the existing local sanitary sewers that link the Sears facility with the Charles River Valley Sewer (CRVS). This evaluation was based upon sewer sizes, slope and segment length data taken from BWSC wastewater system maps. The results of this capacity analysis, which are shown in Table 6.3-1, generally show that there is adequate capacity to accept additional sanitary flows from the redevelopment of the Sears facility.

The Sewage Division of the MWRA was consulted regarding the interceptor systems into which the Fenway area local sewers flow. The 66" CRVS, which has a peak capacity of approximately 30 million gallons per day (mgd), originates in Waltham and conveys dry weather, and some wet weather flows from communities along the Charles River through the Allston-Brighton and Fenway area to the MWRA Ward Street Headworks. The Ward Street Headworks which has peak capacity of 256 mgd discharges to the Boston Main Drainage Tunnel.

The Boston Main Drainage Tunnel with a peak capacity of 438 mgd discharges to the main pumping station at Deer Island. This main pumping station has a design peak capacity of 810 mgd, while the Deer Island Treatment Plant peak design capacity is 848 mgd. During peak flows in excess of the Deer Island Plant capacity the Ward Street Headworks is sometimes throttled in conjunction with the Columbus Park Headworks. At these times the excess flows are diverted to Cottage Farm on the Charles River in Cambridge and the Calf Pasture Pump Station on Columbia Point, respectively. These wet weather overflows receive screening and chlorination prior to discharge.

Project Wastewater Generation

The existing Sears facility consists of approximately 1.3 million square feet of floor space that was historically comprised of office, retail and warehouse space with a peak staff level of approximately 3,000. The proposed development will include 1,546,000 square feet of developed space as summarized in Table 6.3-2 and 6.3-2a.

The majority of the wastewater historically generated by the Sears facility, and that to be generated by the redevelopment is domestic sewage. Additional small discharges to the BWSC sewer system may include seasonal cooling tower water blowdown generated by air conditioning systems operation and heating system steam condensate, depending on the energy systems utilized.

TABLE 6.3-1

EXISTING LOCAL SEWER SYSTEM CAPACITY

Segment Manhole to Manhole	Sewer Street Name	Segment Size (In.)	Length (Ft.)	Scope (Ft./Ft.)	Capacity (MGD)
142 - 137	Brookline	24" X 31"(27)	250'	0.0008	4.8
132 - 90	"	24" X 31"(27)	250'	0.0008	4.8
90 - 84	"	24" X 31"(27)	240'	0.0023	8.1
84 - 81	"	24"	85'	0.0036	7.6
81 - 80	"	24"	195'	0.0022	5.9
80 - P122	Charles River Valley	24"	25'	0.0392	25.1

TABLE 6.3-2

WASTEWATER GENERATION INFORMATION FOR PROPOSED OLMSTED PLAZA

SEWAGE GENERATION

(Based on Title V Data)

BROOKLINE AVENUE HOTEL ALTERNATIVE

Structure	Use Category	Area (gsf)	Sewage (gpd)	Peak Cooling* Blow Down (gpd)	Total Wastewater (gpd)
Main Building					
	Clinical	158,540	11,890	2,375	14,265
	Office	236,208	17,725	3,550	21,275
	R & D	523,517	39,275	7,850	47,125
	Retail	60,880	3,050	935	3,985
	Day Care	10,147	1,715	75	1,790
	Athletic Club	31,708	7,925	285	8,210
	Subtotals	1,021,000	81,580	15,070	96,650
Park Drive					
	Office	216,000	16,200	3,240	19,440
Brookline Avenue					
	Hotel(300-room)	309,000	33,000	3,600	36,600
	Totals	1,546,000	130,780	21,910	152,690

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* Summer Use Only. Winter Operations May Provide Steam Condensate In Lieu Of Summer Cooling Blowdown.

TABLE 6.3-2a

WASTEWATER GENERATION INFORMATION FOR PROPOSED OLMSTED PLAZA

SEWAGE GENERATION

(Based on Title V Data)

BROOKLINE AVENUE OFFICE ALTERNATIVE

Structure	Use Category	Area (gsf)	Sewage (gpd)	Peak Cooling* Blow Down (gpd)	Total Wastewater (gpd)
Main Building					
	Clinical	158,540	11,890	2,375	14,265
	Office	236,208	17,725	3,550	21,275
	R & D	523,517	39,275	7,850	47,125
	Retail	60,880	3,050	935	3,985
	Day Care	10,147	1,715	75	1,790
	Athletic Club	31,708	7,925	285	8,210
	Subtotals	1,021,000	81,580	15,070	96,650
Park Drive					
	Office	216,000	16,200	3,240	19,440
Brookline Avenue					
	Office	309,000	23,175	4,630	27,805
	Totals	1,546,000	120,955	22,940	143,895

---

* Summer Use Only. Winter Operations May Provide Steam Condensate In Lieu Of Summe Cooling Blowdown.

1) Historical Wastewater Generation: Based on the historical peak staff level of 3,000, and utilizing Title 5 Guidelines, the historical average daily sewage flow is estimated as 60,000 gpd. Based on the size of the existing cooling tower, peak cooling water blowdown is estimated as 2,250 gpd. This peak cooling blowdown would have occurred during the summer, whereas the sewage flow is an estimated daily average which can be expected to occur on any day during the year.

2) Proposed Development: Wastewater generation estimates for the proposed Olmsted Plaza project were obtained in a similar fashion to the estimate of historical discharges for the existing Sears facility and, therefore, provide a standarized base for comparison. Results of the wastewater generation estimates are reported in Table 6.3-2 and 6.3-2a. Average daily domestic sewage generation for the Brookline Hotel Alternative has been estimated as 130,780 gpd and seasonal peak cooling water blowdown has been estimated as 21,910 gpd. Total peak wastewater flow during periods of peak summer cooling is the sum of these two amounts, 152,690 gpd.

Impacts and System Connections

The redevelopment of the Sears facility as Olmsted Plaza will contribute a maximum increase in wastewater flow of approximately 68,740 gpd, an increase of 210% over existing conditions. This estimated flow does not incorporate the moderating effects of water conservation components which will be utilized in the building designs and retrofit of the main building. These conservation components can reduce actual flows up to 15%. The engineering/planning division of the BWSC was consulted regarding this estimated increase in wastewater flows and they have indicated that adequate capacity exists in the Brookline Avenue sewer to accommodate this sewage flow increase.

If the existing sewer connection from the Sears facility is to remain it will be maintained during construction of the new facilities. If there is a conflict with proposed construction activities the existing connection will be relocated out of the impact area before construction begins.

New service connections will be provided as required during the phased construction of the new buildings associated with Olmsted Plaza. The construction of these connections will be incorporated into the Olmsted Plaza construction schedule in order to minimize the impact on adjacent streets, and to ensure that adequate facilities are available as required to service the project.

Permitting Requirements

For new construction projects requiring connection to the sewers, an application is made for a sewer connection permit in accordance with 324 CMR 7.00. Design plans/specifications are submitted to the responsible municipal official (in this case, BWSC) who reviews and forwards the application to the Department of Environmental Protection (DEP), Division of Water Pollution Control (DWPC). The permit application must be made ninety days prior to construction of the connection. It is uncertain at this time whether intended future uses would be regulated as "industrial process wastewaters", as such, the need for a Sewer Use Discharge permit will be evaluated on a case-by-case basis.

Mitigation Measures

The MWRA and BWSC were consulted regarding project compliance with the MWRA expressed goal of reducing the inflow of stormwater and the infiltration of groundwater into the sewage collection system by a 2:1 ratio of inflow/infiltration (I/I) reduction to new sewage flow. In areas with combined sewers this goal is addressed through the separation of storm and sanitary sewers on site and/or within local systems. Based on dicussions with BWSC planning/engineering it is understood that at this time within areas such as the Fenway, where storm and sanitary sewers are separate systems, there is no program in place to identify project specific I/I reductions.

As stated in the existing systems section, during maintenance or periods when the Deer Island Treatment Plant design capacity is exceeded, the Ward Street Headworks is sometimes throttled with the overflow discharged to the Charles River at Cottage Farm in Cambridge. The sewage division of the MWRA was consulted to ensure that Olmsted Plaza is consistant with the ongoing Combined Sewer Overflow Facitlites Plan process. Technical memorandum B3-7* deals with various requirements related to the restoration of the Fens and Muddy River as recommended in the 1982 CSO Facilities Plan. CSO facilities examined in predesign included the Muddy River screening facility which would have been located just north of the proposed Emerald Necklace Park at the downstream end of the Muddy River. The MWRA chose not to proceed with this facility since it would not have resulted in the reduction of CSO. The MWRA and its consultant have indicated that Olmsted Plaza will not affect any aspects of CSO facilities.

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* Combined Sewer Overflow Facilities Plan, Technical Memorandum B3-7, Projec P15-Predesign, Restoration of the Fens and Phase II in System Modifications in the Muddy River Subarea, Prepared for the MWRA by Whitman & Howard Inc., July 20, 1988.

6.3.2 Storm Drain System

Description of Existing Facilities

The existing Sears facility is serviced by a storm drainage system along Brookline Avenue known as the Muddy River Conduit. This conduit was built in the late 19th century and is owned and operated by the BWSC. Twin 72" culverts originating with an inlet structure at the downstream end of the Muddy River divert the flow of the Muddy River southeasterly beneath the site of the proposed Emerald Necklace Park to the Brookline Avenue Gatehouse, a below grade structure adjacent to the Park Drive intersection. An 84" X 108" conduit runs southerly from the gatehouse toward the Back Bay Fens and a 108" X 132" conduit (Muddy River Conduit) drains easterly along Brookline Avenue to Commonwealth Avenue where it turns northerly along Deerfield Street and outlets at the Charles River. The dry weather base flow of the Muddy River (4mgd +/-) normally enters the Muddy River Conduit and during wet weather overflow at the Brookline Avenue Gatehouse is directed to the Back Bay Fens. Figure 6.3-3 details the existing storm drainage facility located adjacent to the site.

Capacity of Existing Facilities

Technical Memorandum B3-7 examined, in part, the twin 72" conduits which link the Muddy River with the Brookline Avenue Gatehouse and the Muddy River Conduit. The findings and conclusions of that memorandum implied a wet weather system capacity of approximately 170 mgd and reported base-dry weather flows of 4 mgd at 0.1 feet per second. This system was constructed in the 1880's and record drawings were not available. Information contained on the wastewater system plans maintained by the BWSC indicates that a flat slope prevails throughout the Muddy River Conduit.

The maintenance division of the BWSC was consulted regarding the operation of this system. The BWSC indicated that no flow problems have been experienced with this system, and that the catch basin systems tied into the Muddy River Conduit have not been known to surcharge.

Impacts and System Connections

The site of the existing Sears facility is almost exculsively paved for surface parking and loading, with some minor landscaping along Brookline Avenue. Integral elements of Olmsted Plaza include the elimination of all surface parking and substantial improvements to the site

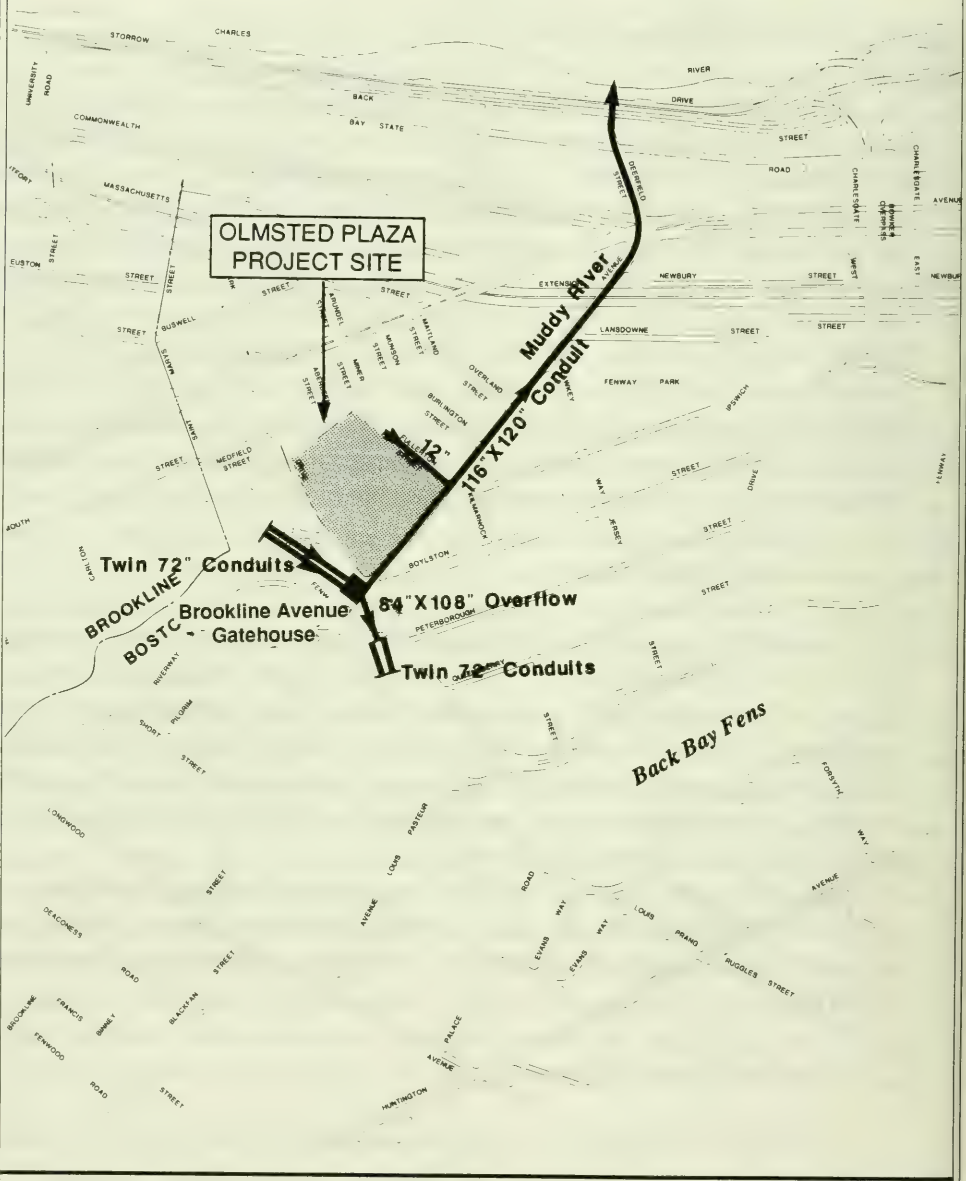

FIGURE 7.3-3
EXISTING STORM DRAINS IN PROJECT VICINITY

landscaping. These elements, in conjunction with a redeveloped total footprint that roughly equals the existing footprint, allow the conclusion that no additional storm runoff will result from the redevelopment. When consideration is given to the restoration of the nearly two-acre "Missing Link" Parcel from parking lot to urban park, reductions in storm runoff will be realized.

Storm drain service to the existing site will be provided at all times during redevelopment by either maintaining the existing service system in place, by temporary relocation or substitution of the system, or by replacement of the existing system by a new system.

System Improvements and Mitigation Measures

It is anticipated that new catch basin locations will be required to adequately drain stormwater runoff from Olmsted Plaza to the Muddy River conduit. All new service connection construction and system modifications will be incorporated into the overall Olmsted Plaza development construction schedule so that they are functional when required to carry flow in the service area of the site. Design and construcion of all new storm drain facilities will be completed to BWSC standards and will be subject to its review and approval.

Parking garage drains will be discharged via oil and grit separators designed and built to MWRA standards to minimize the potential of pollutants such as oil, gasoline, grease, and suspended solids from entering the storm sewer. These separators will be routinely monitored and maintained by the developer.

6.4 Energy Systems

6.4.1 Energy Use Strategies

The primary energy needs of the Fenway area are currently serviced by Boston Edison Company and Boston Gas Company. Historically, the Sears facility purchased electricity from Boston Edison for all lighting, air conditioning and mechanical equipment operation. Natural gas from Boston Gas was utilized for boiler ignition and to test gas appliances associated with catalogue sales. Since the steam supply lines of Boston Thermal Corporation extend only to the area of Northeastern University, site heating requirements were met through an internal high pressure steam system with fuel oil fired boilers.

An element of the development project planning process is the determination of the most appropriate energy mix strategy by the developer and Mechanical, Electrical and Plumbing Engineer (MEP). The discussions that follow are based on the currently expected energy mix.

At this time, it is anticipated that the primary source for space heating for Olmsted Plaza will be the utilization of three nominal 600 BHP low pressure steam boilers, fired with natural gas for the main building, while electrically powered systems would be utilized for the Park Drive and Brookline Avenue buildings. All lighting, air conditioning and mechanical equipment operational requirements would be met electrically. It is anticipated that each occupied structure will have individual electric services with the idea that this provides for a more reliable and flexible facility operation.

6.4.2 Description of Existing Systems

Electric Service

The existing Sears facility is supplied with primary electric service by Boston Edison Company from their high voltage substation 329 located on Lincoln Street in Brighton. Electricity is fed from this substation through BECO's cable/conduit/manhole network in adjacent streets to the service substation 202 located on the Sears site. Two lines, 202-90 and 202-160 supply 13.8 kva electrical energy to a total of five on-site transformers which feed 120V/208V electricity to the facilities' secondary service.

Natural Gas Service

Low pressure gas is supplied to the Sears facility by the Boston Gas Company through its distribution network of gas mains which loop throughout the city. A 6" service extends from Park Drive to a meter location in the boiler plant of the Sears facility. This boiler plant contained four high pressure steam boilers, with a total of 1529 BHP, fired by #4 & #6 fuel oil, with ignition by natural gas pilots.

6.4.3 Capacity of Existing Facilities

Electric Service

Discussions with the engineering division of Boston Edison Company indicate that the existing substation 329 has a rated capacity of 300 mva and is currently carrying a load of approximately 175 mva. Based on this excess capacity, BECO has indicated they will be able to satisfy the increased electric load in the project area without major modifications to the distribution network.

Initial evaluations of the distribution system indicate that the existing transformation is not adequate to service the proposed project. Details for the location and size of primary service vaults and primary transformation will be the subject of ongoing discussions with BECO representatives.

Natural Gas Service

Initial discussions with Boston Gas Company representatives indicate that adequate supplies of gas are available to service a greater demand in the city than is presently experienced by their system. Boston Gas has stated that the increase in gas demand imposed by the proposed project can be serviced with modifications to the existing distribution system.

The 6" service connection to the Sears facility from Park Drive has an estimated capacity of 4,000 cubic feet/hour which is inadequate to meet the anticipated load and will be replaced.

6.4.4 Historical Energy Requirements

Since meter records were not readily available for the historical operating period of the Sears facility efforts to develop existing/historical energy use information were based on standard estimating techniques and discussions with the facility superintendant.

Electric Use

Annual electric use data for the Sears facility is presented in Table 6.4-1. Included is the electricity to satisfy lighting, mechanical equipment and air conditioning requirements. It should be noted that only a small portion of the facility was provided with air conditioning.

The annual electric use for the Sears facility was approximately 8.9 X 10^6 kwh/yr with a peak demand estimated as 4 megawatts.

Natural Gas Use

Natural gas did not play a major role as an energy source for the Sears facility since the steam plant was fired with #4 and #6 fuel oil. Gas use was essentially limited to boiler ignition and to test the gas appliances associated with catalogue and retail sales.

TABLE 6.4-1

ANNUAL ELECTRIC USE FOR EXISTING STRUCTURE AND PROPOSED PROJECT

(KWH/YR X 10^6)

Structure	Existing Area (gsf)	Estimated Historical Electrical Use	Proposed Total Area (gsf)	Estimated Electrical Use
Main Sears Building	1,299,986	8.9	-----	-----
Office	-----	-----	236,208	2.5
R&D	-----	-----	523,517	34.5
Retail	-----	-----	60,880	7.5
Other	-----	-----	200,395	6.1
Park Drive				
Office	-----	-----	227,000	4.6
Brookline Avenue				
300-Room Hotel	-----	-----	309,000	5.4
Totals	1,299,986	8.9	1,557,000	60.6

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* Electric Use
Main Building - Lights, Mechanical Equipment and A/C.
Park Drive - As for Main Building Plus Heat & Hot Water.
Brookline Avenue - As for Park Drive.

6.4.5 Proposed Project Energy Requirements

Projected energy requirements for Olmsted Plaza are based on the utilization of two energy sources. Currently the expected energy use strategy is as follows:

Energy Source	Use
Electricity	Lighting, Mechanical Equipment Operation, Heating, Domestic Hot Water and Air Conditioning.
Natural Gas	Heating, Humidification, Domestic Hot Water and Kitchen Use.

Table 6.4-2 presents a comparison of total energy use of the Sears facility and the proposed Olmsted Plaza development.

Electric Use

It is anticipated electricity will be utilized to satisfy all lighting, mechanical equipment operation, and air conditioning requirements in addition to the heating and domestic hot water needs of the Park Drive and Brookline Avenue buildings. It is anticipated that air conditioning requirements can be satisfied most efficiently electrically as opposed to alternative energy sources. Information relative to annual electric use for Olmsted Plaza is presented in Table 6.4-1. The annual electricity consumption is estimated as 60.6 X 10^6 kilowatt hours per year, with a peak load of 18.3 megawatts.

Natural Gas Use

Natural gas utilization will play a significant role in satisfying Olmsted Plaza's energy needs. It is currently anticipated that all space heating requirements for the main building will be satisfied through natural gas fired low pressure steam boilers. Table 6.4-3 presents information regarding natural gas utilization projections for Olmsted Plaza. The annual natural gas use has been estimated s 67.9 X 10^6 cubic feet per year, with a peak load of 54,285 cubic feet per hour.

TABLE 6.4-2

TOTAL ENERGY USE INVENTORY

(BTU/YR X 10^9)

Structure	Existing Area (gsf)	Existing Energy Use	Proposed Area (gsf)	Proposed Energy Use
Main Sears Building	1,299,986	30.4*	1,021,000	238.5
Park Drive	-----	-----	227,000	15.7
Brookline Avenue	-----	-----	309,000	20.4
Totals	1,299,986	30.4	1,557,000	274.6

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* Includes electricity useage only.

TABLE 6.4-3

ANNUAL NATURAL GAS USE FOR EXISTING STRUCTURE AND PROPOSED PROJECT

(CF/YR 10^6)

Structure	Existing Area (gsf)	Historical Gas Use	Proposed Total Area (gsf)	Estimated Gas Use
Main Sears Building	1,299,986	Not Avail.	1,021,000	65.9
Park Drive	-----	-----	227,000	-----
Brookline Avenue	-----	-----	309,000	2.0*
Totals	1,299,986	?	1,557,000	67.9

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* Kitchen Use Only.

6.4.6 Impacts and System Connections

Electric Service

The redevelopment will result in a greater utilization of electricity for typical uses, air conditioning and heating. The estimated annual electric requirements for Olmsted Plaza are contained in Table 6.4-1 demand amounts to 60.6×10^6 kwh/yr.

It is not anticipated that new substations or major modifications will be required in the Boston Edison distribution facilities to meet the specific requirements of Olmsted Plaza. Boston Edison has stated that excess capacity exists at the Lincoln Street substation. This seems to be contrary to public perception that the existing system is subject to periodic failures. Discussions with the Boston Edison Company have indicated that within the Fenway area it is possible to obtain primary electric service through the 4.9 kva direct distribution system, or through the 13.8 kva subtransmission system which is more reliable with infrequent outages. The Sears facility is currently supplied, as will be the case for Olmsted Plaza, with primary electric service through the 13.8 kva system. The reports that power outages are common in the Fenway/Audubon Circle area are related to primary electric service from the 4.9 kva system. The electric needs of Olmsted Plaza can be met through the 13.8 kva system without exacerbating the outages experienced within areas serviced through the 4.9 kva system.

No adverse impact is aniticipated in servicing facilities adjacent to the project site during construction. Electric service to existing facilities will be maintained at all times. This will be accomplished by either maintaining existing facilities in place, temporarily relocating facilities during construction, or replacing existing facilities with new facilities built in conjunction with the development.

Natural Gas Service

Natural gas is expected to be utilized to satisfy all space heating and domestic water heating for the main building and limited to kitchen use for the Brookline Avenue building. The estimated annual useage is reported in Table 6.4-3 and amounts to 67.9×10^6 cubic feet per year with a peak load of 54,285 cubic feet per hour. Boston Gas is reviewing the status of their existing mains surrounding the site, it has been indicated that the increased demand can be serviced with modifications to the distribution system and the sites service connection. These modifications will be the subject of ongoing discussions with Boston Gas Company and will be designed as the energy use strategy is finalized.

6.4.7 System Improvements and Mitigation

Electric Service

New service to Olmsted Plaza will be supplied by the construction of three network vaults supplied with four 13.8 kva service connections with the Boston Edison subtransmission system. Utilization voltage will be 480Y/277V, three phase, four wire, 60 hz which requires replacement of the existing on-site transformers. Location and design of the network vaults, primary transformers, details of proposed modifications and implementation schedules will be coordinated throughout design and construction with Boston Edison. Costs of any modifications required to either the BECO system or on-site systems will be born by the development, either through direct implementation of the modification, or through anticipated revenues accruing to BECO by the development with no costs to other customers.

Natural Gas Service

Based on the current energy use strategy, the existing local distribution system will require improvements such as construction of new facilities or augmented facilities within the area of the site. Boston Gas Company is reviewing the status of its existing mains surrounding the site. It is premature to identify specific gas main replacements and as such discussions with Boston Gas Company will be ongoing as the energy use strategy is finalized.

Modifications to the gas system will be incorporated into the general build out schedule of the development to minimize any adverse impacts on existing users and on adjacent travel ways. Costs of modifications to the gas system will be born either by the developer or indirectly by the development through anticipated increases in Boston Gas revenue.

6.4.8 Telecommunications Systems

Description of Existing Facilities

Basic telecommunication services are supplied to the Sears Building by the New England Telephone Company (NET). These services are provided by their Back Bay Central Office (CO) through a conduit and manhole system located in area streets. Normal dial tone service to the Sears site is primarily by way of fiber and copper circuitry.

Measures to Accommodate Development

Discussions with NET representatives* indicate that the Back Bay CO has available switching capacity to accommodate the level of additional future load anticipated by the redevelopment of the Sears site. The existing cable, conduit and manhole systems also appear to be adequate to sustain the new development. Further investigation by NET will be necessary, as the building design proceeds, to verify the adequacy of the cable system.

It is anticipated that the new development will be serviced by a combination of fiber optic and copper circuitry. All work on the telecommunications system will be performed to NET standards and will be subject to their review and approval. Costs of on-site system modifications will be borne by the developer.

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* Personal communication with Mr. Jesse Downey, New England Telephone Company, December 28, 1989.

7.0 RESPONSE TO COMMENTS

The formal public comment period on the combined DPIR/DEIR began on October 3, 1989 with the issuance of a notice of availability published in the Boston Herald, and formally ended on November 13, 1989 at the conclusion of the 30 day public comment period mandated by MEPA regulations. Within that time frame the following groups, institutions and individuals submitted written comments:

1. Fenway Garden Society
2. Friends of the Muddy River
3. Children's Hospital
4. MDC
5. B. McKinley
6. 448/452 Park Drive Condominium Association
7. Charles River Watershed Association
8. Boston Fenway Program, Inc.
9. KAFNI
10. MASCO
11. Boston Transportation Department
12. Riverway Square Condominium Trust
13. Wheelock College
14. Boston Parks and Recreation Department

Each of these comment letters, as well as the MEPA certificate, is included in this section of the FPIR/FEIR. In the right hand margin of the certificate and each letter, the comments have been numbered. Following each comment letter is a set of corresponding numbered responses by the proponent. An effort has been made to provide a thoughtful response to each comment or question posed.

Several additional comments were forwarded to the proponents after November 13, 1989. A detailed response to each of these late filed comments has been drafted as well. This set of comments consists of letters from the following:

1. Department of Environmental Management
2. Executive Office of Transportation and Construction
3. Massachusetts Historical Commission
4. Boston Environment Department
5. Stephen Kaiser
6. Audubon Circle Neighborhood Association
7. MBTA
8. Boston Water and Sewer Commission
9. MWRA

The proponent would like to point out that its public involvement efforts have gone far beyond compiling responses to the 23 letters cited above and the MEPA Certificate. Representatives of Olmsted Plaza have met regularly with State and City agencies, and with interest groups and neighborhood groups since the inception of the project. These meetings have included presentations and sometimes spirited dialogue, and have resulted in a series of project refinements and commitments to mitigate impacts. The proponent believes this program, which continued well after the closure of the public comment period, has been most fruitful. By the time the BRA Board concluded its public hearings on the Planned Development Area (PDA) application for the project on November 30, 1989, several of the authors of the comments enumerated above testified in support of the project; none testified in opposition. As a result, the BRA Board voted unanimously to grant the PDA application. The proponent believes that most of the comments that follow have been answered to the satisfaction of the entities and individuals who have been meaningfully involved in the public reviews of Olmsted Plaza.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

ICHAEL S DUKAKIS
GOVERNOR

JOHN DEVILLARS
SECRETARY

November 20, 1989

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS
ON THE
DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT NAME : Olmsted Plaza Project
PROJECT LOCATION : Boston
EOEA NUMBER : 7643
PROJECT PROPONENT : Olmsted Plaza Assoc.
DATE NOTICED IN MONITOR : October 13, 1989

The Secretary of Environmental Affairs herein issues a statement that the Draft Environmental Impact Report submitted on the above project adequately and properly complies with the Massachusetts Environmental Policy Act (G.L.,c.30,s61-62H) and with its implementing regulations (301 CMR 11.00).

① Omission of comments on the Environmental Notification Form and omission of the BRA Scope for the PNF made it difficult to assess the adequacy of the DEIR/DPIR. These omissions could be grounds for rejection. In deference to the time constraints of the proponent, the Olmsted Plaza project is being allowed to proceed to the FEIR/FPIR stage. However, a decision of adequacy on the FEIR/FPIR will in part be based on inclusion of copies of all comments received during the DEIR/DPIR review, detailed responses to those comments, and a copy of the BRA decision on the DPIR.

Olmsted Plaza is a complex project, deserving of a sensitive, thorough review, which can best be achieved during the normal MEPA time schedule and in close coordination with the BRA review process. Greater effort must be made by the proponent to coordinate both processes to ensure that the FEIR/FPIR is a complete document which satisfies both MEPA and BRA concerns. ②

The FEIR must respond in detail to the many public and agency comments. These should be categorized with a focus on, but not limited to, Traffic, Mitigation, Transit, Parking, Flood Plain/Wetlands, Pedestrian Circulation, and Landscape. In order to facilitate review, margins of the text of comments should be

100 CAMBRIDGE STREET BOSTON MA 02202 (617) 727-9800

connection as a traffic flow improvement measure." It seems we are being presented with conflicting information which must be clarified in the FEIR/FPIR.

MITIGATION

The Olmsted Plaza project will have a major impact upon the roadway network in the Kenmore Sq./Fenway area. This area currently experiences severe traffic problems, as indicated in the traffic analysis. Of the 24 intersections studied, 14 currently operate at level of service E/F, with an anticipated drop in level of service at six additional intersections with the project in place.

The mitigation package which has been presented has several serious flaws, the most outstanding of which relates to a lack of specific commitment to mitigation measures. As stated in the DEIR/DPIR itself, traffic impacts need not be "an inhibiting factor in the development of Olmsted Plaza, provided agreements on the financial responsibility and timing for mitigation measures can be negotiated." It is clear that this has not as yet been done and until a successful conclusion has been reached in this regard, the adequacy of the Final document will be seriously compromised. A comprehensive mitigation scheme, dealing with all of the concerns stated below must be presented in the FEIR/FPIR. Proponent responsibility must be clearly defined and letters of commitment from appropriate state and city agencies should be included.

Proposed mitigation involves elimination/restriction of approximately 70 on-street parking spaces. This poses an additional impact upon the already limited resident parking conditions within the project area. The types of displaced spaces must be defined and means for compensation discussed. An explanation of the Boston parking freeze and how it relates to Olmstead Plaza must be presented.

The FEIR/FPIR must contain a discussion of project phasing and how it fits in with the mitigation stream. As expressed in several comments and a recent newspaper article, the proponent has been asked to consider a development scenario encompassing three, rather than two phases. Further information should be provided regarding the feasibility of such an option. Necessary mitigation to support Phase I and Phase II, and possibly PhaseIII, must be clearly identified. The level of development which can be adequately supported by mitigation proposed and committed to by the proponent must also be identified.

A wide variety of traffic mitigation options were presented in the DEIR/DPIR. The preferred mitigation scheme involves intersection-specific improvements to 19 of the 24 intersections analyzed. These options and their feasibility must be discussed with appropriate city and state officials. The feasibility of implementation, costs and responsibility of these measures must be addressed along with scheduling. (8A)

The DEIR/DPIR makes the assumption that the majority of Olmsted Plaza would utilize a transit mode split of 44 %. This assumption appears to be in the high range and should be substantiated. MAPC should be consulted for guidance in arriving at a more realistic figure. In order to raise the mode split by 10-15% as proposed, an extremely aggressive Transportation Management System will have to be in place. These strategies must be expanded upon and specifics provided regarding implementation. ⑪

Although the proponent has stated they will be working with MASCO regarding improvements to local bus service, it appears that negotiations have not yet begun. The FEIR/FPIR must provide specific information as to what improvements and expansion plans will be considered. Details regarding implementation and financial responsibility should also be provided. ⑫

Plans to increase parking capacity in the garage from 1525 to 2052 seem to be at odds with promotion of public transit use. Consideration should be given to reducing the size of the garage, opening the garage at 9 AM to discourage use by employees, and satellite lots with shuttle bus to the site. More information should be provided regarding fare structure and space allocation in the garage. Special consideration should be given to resident parking needs. ⑬

The letter of comment from Steve Kaiser outlines additional areas regarding mitigation deficiencies which must be addressed. The Final document must fully respond to his concerns. (8B)

TRANSIT

Public transit is an important component of the Olmsted Plaza project, however, the transit mitigation scheme relies heavily upon the MBTA for implementation. These measures include a new Fenway Park Green Line station, a cross over switch, and increasing the number of three-car trains. At this time, the MBTA has no plan for financing these measures, nor for upgrading/rebuilding the Fenway station, which is adjacent to the ⑭

Olmsted site. The proponent must take responsibility for upgrading the station if employees are to be encouraged to utilize public transportation and therefore reduce traffic impacts. MBTA and EOTC have provided suggestions as to how this can be accomplished; for example, the "Adopt a Station" concept. The proponent must meet with officials of both agencies to determine the cost of mitigation measures and reach an agreement as to how and when they will be implemented. Financial responsibility must be identified. Consideration should be given to a joint venture with other developers in the area who might be willing to fund transit improvements.

LANDSCAPING

Friends of the Muddy River and the Fenway Garden Society have expressed serious concern regarding the twin 72-inch conduits enclosing the Muddy River beneath the Olmsted link, and the flow behavior of the river as it relates to flood plain and wetlands regulations. They recommend restoration of the Muddy River to open channel flow which would improve aesthetics, water quality and alleviate flood plain concerns. A thorough discussion of these concerns must be provided in the FEIR/FPIR. The DEM Olmsted Historic Landscape Preservation Program supports the proposal to restore the open water course to the park site as part of the Emerald Necklace Master Plan. Suggestions contained in their letter of comment must be given serious consideration.

MISCELLANEOUS

The Pedestrian Circulation study should be expanded upon to include pedestrian access to the Olmsted Park.

It appears evident that a component of the project involves bio-medical research. Such a use raises concern regarding hazardous substances, chemicals, radioactive and biological materials, and methods for handling, storage, and disposal of such materials. The FEIR/FPIR must clarify the extent to which the project involves this use and its implications.

Additional issues raised in letters of comment on the DEIR/DPIR must be given detailed response. In summary, these issues include: Construction Impacts, Hazardous/Solid Waste, Water and Sewer, Conservation Measures, Infrastructure, Drainage.

The FEIR/FPIR must be distributed in accordance with 301 CMR 11.24 and to all who have commented on the DEIR/DPIR.

November 20, 1989
DATE

John DeVillars, Secretary

Comments received :

11-13-89	DEM
11-13-89	Friends of Muddy River
11-13-89	Stephen Kaiser
11-12-89	KAFNI
11-14-89	Audubon Circle Neighborhood
11-13-89	Fenway Garden Society
11-3-89	MASCO
10-20-89	Barbara McKinley
10-31-89	David Peck
11-1-89	Boston Fenway Program
11-11-89	Board of Managers/452-448 Park Dr.
11-13-89	Boston Transportation Dept.
11-14-89	MWRA
11-9-89	MDC
11-9-89	Boston Water & Sewer
11-20-89	EOTC

JD/CG/cg

MEPA 1

The principal authors of the DPIR/DEIR were not aware, until they received this comment, and reviewed the regulations, that there was any requirement to include copies of the comments themselves in the DPIR/DEIR. The authors incorrectly believed that it was necessary to include only the scoping certificates in the document, particularly given the fact that the MEPA scope did not reference the need to specifically address certain of the public comments, as it often does.

In response to this comment, the FPIR/FEIR, however, includes each of the comment letters filed on the DPIR/DEIR, including the nine sets of late-filed comments received after November 13, 1989. The FPIR/FEIR also includes detailed responses to each comment received, and a copy of the Preliminary Adequacy Determination by the BRA (Appendix I). The comments to the ENF are on file at MEPA. Copies will be furnished to anyone that requests them. No such requests have been received to date.

MEPA 2

The proponent is taking extensive efforts to see that the City and State processes are well coordinated to respond to both MEPA and BRA concerns. This document, for example, contains the new technical efforts required by both the BRA and MEPA (Section 2.2). Likewise, this document contains the commitments and responses submitted to both the City and the State. The filing of a joint document is another example of the proponents commitment to coordinating the MEPA and BRA processes. If there are areas in which MEPA believes the effort is insufficient, Olmsted Plaza Associates is prepared to take corrective action.

MEPA 3

The DPIR/DEIR incorrectly identified the dates of the original traffic study for the 24 study area intersections as occurring during the months of June, July and August (p. 3-7). In fact, of the 26 intersections that have been studied, 14 were counted in April, 10 were counted in June and July, and two were counted in November. Of the 10 intersections that were counted during the summer months, a majority matched fairly closely or showed higher volumes than the corresponding counts taken for the MASCO traffic report (see MASCO 2). One intersection, Brookline Avenue at the Riverway, showed a significant drop in traffic volume. This intersection was counted again in November. The results show an insignificant rise in traffic volumes when comparing the June counts to the November counts. For this reason, no adjustment factor was used for the summer counts. Section 3 of this report describes this issue in some detail. The computer backup data is supplied in Appendix II.

The transit study at Fenway Park Station was also reconducted in November with the results discussed in Section 3 and Appendix II. Pedestrian and Parking issues are addressed in Audubon Circle 9 and Sections 3.6 and 3.7, respectively.

MEPA 4

The ITE Manual defines "Research Center" (Land Use Code 760) as:

> "facilities or groups of facilities devoted nearly exclusively to research and development activities. While they may also contain offices and some light fabrication areas, the primary function is that of research and development.
>
> Gross floor area per employee averaged 450 square feet or approximately 2.2 employees per 1,000 square feet of floor area."

The Institute collected data from 18 separate research centers to develop the AM/PM peak hour trip rates.

The correlation is a measure of the degree of linear association between 2 variables. The correlation computed by ITE for the PM peak hour was 0.820, which is quite good.

It is the developers' intention to provide 523,817 s.f. of Research and Development space for medical, and technical research facilities.

MEPA 5

The technical comments regarding intersection operations at selected locations have been reviewed carefully and taken into consideration in Section 3.0, the updated traffic analysis. Responses to both the MASCO and Kaiser letters have been provided, as well.

MEPA 6

Early in the process of studying project traffic impacts the traffic engineers predicted that the creation of a Maitland Street Connector might have the ability to provide significant improvements in local traffic flow. Therefore this possibility was suggested as a potential public benefit to be explored. The detailed studies, however, concluded that the benefits of this design are limited, and the costs are high. The return on the investment of mitigation dollars with this design is quite poor. Accordingly, the concept has been dropped from further consideration. This is more fully explained in Section 3.1.

MEPA 7

Section 3 of the FPIR/FEIR contains a considerable amount of detail on the mitigation efforts planned for Olmsted Plaza. Specific details of the proponent's commitments are also included in the Transportation Access Plan Agreement between the Boston Transportation Department and the proponent. A copy of that agreement is attached as Appendix VI. Included in that appendix are letters from the agencies with an interest in the proposed mitigation plans, as well as the Cooperation Agreement between the City and the developer.

MEPA 8

Since the DPIR/DEIR submission, the developer has worked closely with various City and State agencies that will be involved in the development and implementation of the mitigation schemes, specifically the Boston Transportation Department, the Metropolitan District Commission and the MBTA. The Transportation Access Plan Agreement (Appendix VI) with the City of Boston spells out in detail the proponent's responsibilities with respect to local transportation issues. A letter from Commissioner Bhatti of the MDC expressing his agency's support for the proponent's plan and other correspondence from the MBTA and MASCO are evidence of the cooperation between the involved agencies and the developer, and are also included in Appendix VI. The specific details of the agreement with the MBTA will be finalized when architects for the developer and the MBTA mutually agree upon a re-design of the Fenway Park MBTA Station.

MEPA 8A

In the DPIR/DEIR, the traffic engineers suggested a comprehensive set of mitigation measures for the roadway system surrounding the project area. The measures suggested all feasible means for improving the network, rather than suggesting only those measures necessary to attain a "no impact" situation. No attempt was made in the DPIR/DEIR to assign responsibility for funding or implementing the wide range of improvements, since no cost estimates existed at that time, and because none of the agencies with jurisdiction had seen the proposed list of mitigation measures prior to the publication of the DPIR/DEIR (i.e. the mitigation designs had been developed and first presented in the DPIR/DEIR). Discussion of which circulation systems and which mitigation measures should be adopted have ensued based upon the materials presented in the DPIR/DEIR.

The proponent concluded that it was prepared to either design and undertake a $500,000 traffic mitigation program, or to provide a design for a more comprehensive program (a descendant of the program outlined in the DPIR/DEIR) to which it would contribute $500,000. The Boston Transportation Department encouraged Olmsted Plaza Associates to do the latter. The mitigation plan that flows from this decision is described in Section 3.4 of this report. The commitment of the proponent is documented in the Transportation Access Plan Agreement that is included in Appendix VI. The proponent has provided a suggested schedule for implementing the mitigation program, and has committed to making all of its funding available prior to occupancy of any Phase II facilities.

MEPA 9

The total number of on-street parking spaces that will be eliminated by the project are listed below.

Location	# Spaces	Existing Utilization	Type
Park Dr. between Site and Beacon St.	14	100%	Free parking
Brookline Ave. between Park Dr. and Fullerton St.	15	76%	2H-Meter
Fullerton St.	21	67%	Free Parking
TOTAL	50		

To mitigate parking space eliminations, the developer has committed to provide evening and weekend residential parking in its parking facilities (see Section 3.7).

In order to assure the project's success in the competitive market, self-sufficient parking facilities have to be provided to accommodate the site demand. However, the developer has committed to manage its parking facilities in an effort to minimize impacts on the surrounding parking system and to discourage auto use to the site. The detailed parking management strategies which focus on these objectives are thoroughly discussed in Section 3.7 of the FPIR/FEIR and in the Transportation Access Plan Agreement (Appendix VI).

MEPA 10

To the best of our knowledge, KAFNI 22 is the only comment that suggests considering a three-phase project. A detailed response to that comment has been provided.

A comment from the 448/452 Park Drive Condominium Association also suggests that the project should be reexamined after Phase I is complete (without suggesting that Phase II should be subdivided into Phases II and III). The response to KAFNI applies to this suggestion as well. Note that both the Cooperation Agreement and the Transportation Access Plan Agreement (Appendix VI) specifically tie future building approvals to documenting the success for mitigation efforts and funding.

MEPA 11

Olmsted Plaza Associates is required to strive for the aggressive mode splits specified by the Transportation Access Plan Agreement with Boston Transportation Department (see Appendix VI). The measures to be taken to encourage this split are enumerated in that agreement. Please also note that in its letter Children's Hospital states that it is exceeding the targets cited in the DPIR. They believe, based upon their employee surveys, that we may be overestimating auto splits.

The mitigation target of increasing transit ridership by 10 to 15 percent is based on the study by the U.S. Department of Transportation in 1984, titled "Traffic Mitigation Reference Guide." Based on the study results, if the developer will fully implement the mitigation strategies set forth in the Transportation Access Plan, the target can be achieved. It should be noted that the 10 to 15 percent increase is in the transit ridership, but not the overall project mode split. If the target can be achieved, it will result in an increase in the transit mode split of 5 to 7 percent.

MEPA 12

The proponent has in fact begun negotiations with MASCO, the area Transportation Managemen Organization, relative to making shuttle bus service available to Olmsted Plaza tenants and workers. Please see Appendix VI which outlines the preliminary agreement between the proponent and MASCO.

MEPA 13

In Section 2.1, the FPIR/FEIR explains the revised parking concept devised in response to comments on the DPIR/DEIR. The new concept splits parking between two garage sites with a total of 1649 spaces. The proponent believes this concept is consistent with the goal of promoting the use of public transportation. Section 3.7 of the FPIR/FEIR also provides more detail on the allocation of parking spaces to the various categories of users. Still more detail on parking space allocation and rate structure is included in the Transportation Access Plan Agreement, which is attached as Appendix VI.

MEPA 14

The proponent has agreed to adopt Fenway Park Station as a condition for implementing the second phase of the project (see Appendix VI). The developer will not only build a new station, but has agreed to maintain it for a period of 25 years.

MEPA 15

The proponent's position on this issue is thoroughly discussed in its response to the letter of comment by the Fenway Garden Society.

MEPA 16

The detailed pedestrian circulation plan, including the access between the site and Fenway Park Station, has been provided in Section 3.6.

MEPA 17

Section 2.2 of this report outlines a preliminary Solid and Hazardous Wastes Management Plan. Furthermore, a Final Solid and Hazardous Wastes Management Plan will be completed after review of comments on the FPIR/FEIR.

13 November 1989

John P. DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Mass.

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COMMENTS OF
FENWAY GARDEN SOCIETY

on

DPIR/DEIR
OLMSTED PLAZA

EOEA File no. 7643

Dear Secretary DeVillars:

As part of its redevelopment of the Sears Kenmore distribution center, Olmsted Plaza Associates has acquired the Sears, Roebuck and Company parking lot across Park Drive from the Sears building and proposes to reconstruct this lot as parkland and then convey it to the City of Boston or a designee. (DPIR/DEIR at 2-1.). The original conveyance of this land to Sears severed Boston's "Emerald Necklace," the historic parkland designed by Frederick Law Olmsted, from whom the proposed Project takes its name.

This parking lot is designated separately as the "Park Site" in the DPIR/DEIR. What the developer proposes to build there is a "dry park" with a "meandering planting bed" symbolizing the Muddy River and stone dust pathways intended to "recall the curvilinear patterns found throughout the Emerald Necklace ...." (DPIR/DEIR at .627 and Fig. 6-28.) In proposing this plan, the DPIR/DEIR rejects the plan prepared by the Commonwealth's Department of Environmental Management as part of the Olmsted Historic Landscape Preservation Program to restore the Olmsted parks.

The restoration of this land to parkland is unquestionably a significant step toward restoration of this precious urban resource. By its terms, however, the Project proposes to leave untouched the Muddy River course through culverts under the park and merely to make "a gesture to the river course" that the DPIR/DEIR describes as "formerly" running through the park site. (DPIR/DEIR at 10-6.)

In fact, the Muddy River still runs through the site through twin culverts from the Riverway across Brookline Avenue. The DPIR/DEIR fails to address the significance of this course. First, the DPIR/DEIR inadequately deals with the impact of the Wetlands Protection Act, M.G.L. c. 131, Section 40. Second, the proposal rejects opening of the Muddy River too cavalierly based on undocumented considerations of pedestrian traffic and silt excavation. Finally, the DPIR/DEIR discussion of solid and hazardous waste fails altogether to address what it describes as the likelihood that sediments underneath the park site are "contaminated." (DPIR/DEIR at 6-22.)

1. The DPIR/DEIR acknowledges that the Project must meet the wetlands protection regulations of the Department of Environmental Protection, which include the requirement that "[w]ork within bordering land subject to flooding ... shall not restrict flows so as to cause an increase in flood stage or velocity." 310 C.M.R. 10.57(4)(a)(2). The report also assumes that the Project, including the Sears building site itself, is located within the 100-year floodplain. (DPIR/DEIR at 4-56.)

Extensive study of the Muddy River and Back Bay Fens has shown that increasing flow from the Muddy River to the Fens is critical to restoration of the quality of both streams. See CH2M Hill Team, Combined Sewer Overflow Facilities Plan, MWRA Technical Memorandum B37 (July, 1988); DEQE DWPC, Muddy River - Back Bay Fens 1986 Water Quality Data and Water Quality Analysis (Feb. 1987). According to the CH2M Hill Team, the conduits under the Sears parking lot are at least half filled with sediments and debris. CH2M Hill Team, supra, at 2-1. Because these conduits are a critical obstruction, cleaning or removal of these conduits is a major and cost-effective step toward overall restoration of the Emerald Necklace.

By recovering the conduits, the Project will contribute to this significant restriction on the flow of the Muddy River that in turn increases the flood stage or velocity at the point of the proposed park site. The conduits under the site effectively act as a dam within the floodplain. The practical of placing a new park over them is to reinforce this dam and reduce the likelihood of prompt opening.

The DPIR/DEIR also disregards the effect of the dam on its floodplain analysis. It relies on a Federal Emergency Management Agency Flood Insurance Study (Figure 4.5.2) which finds that "the 100-year flood should be completely contained within this culvert." DPIR/DEIR at 4-53. This conclusion, however, is based on the theoretical capacity of the culverts and disregards their actual condition as described by the CH2M Hill Team. In turn, the 100-year flood elevations assumed are suspect (as evidenced by actual experience with the 1955 flood at the site).

2. The DPIR/DEIR offers as reason for rejecting the Department of Environmental Management's design reopening the Muddy River through the site that this design purportedly "does not address local pedestrian circulation patterns, especially between the corner of Brookline Avenue and Fenway, and the Fenway Park MBTA Station." (DPR/DEIR at 6-22.)

Yet there is no connection to studies of existing pedestrian traffic patterns to support this reason. See Section 3.12.2 and Figures 3.12.-1, 3.12-2, 3.12-3. On the contrary, these studies do not appear to reflect traffic through the parking lot, but only at crosswalks at the perimeters. And, in fact, the parking lot presents difficult street crossings and is surrounded by shrubs and very high curbs, making pedestrian passage difficult. Even a "wet park," therefore, will probably expand rather than restrict pedestrian circulation.

3. The DPIR/DEIR also presents as a reason for rejecting DEM's park design the likelihood that "much of" the sediments removed from the conduits "may prove to be contaminated." (DPIR/DEIR at 6-22.) Yet the discussion of solid and hazardous waste issues in Section 4.7 contains absolutely no reference to this apparent contamination. Either the estimate of contamination is unfounded -- or the developer proposes to convey to the City property it believes is contaminated without disclosing the extent or nature of the problem or assuming any responsibility for it. In the era of Chapter 21E and strict liability for oil and hazardous waste disposal, such a conveyance is extraordinary.

* * *

While the Project presents undeniable benefits, we respectfully request that approval be withheld unless the developer agrees to open the Muddy River as a part of its restoration of the Emerald Necklace parcel -- truly fulfilling the promise to restore this "missing link" in the Necklace and living up to the Olmsted the developer has adopted.

Respectfully submitted,

FENWAY GARDEN SOCIETY
By:
Jack A. [illegible]
President

9000K/89

Fenway Garden Society

The Fenway Garden Society letter deals exclusively with a fixed position on one issue. "While the Project presents undeniable benefits, we respectfully request that approval be withheld unless the developer agrees to open the Muddy River as a part of its restoration of the Emerald Necklace parcel...". While the developer understands the concerns expressed, it has repeatedly stated that it is not prepared to undertake the suggested actions. There are several reasons that this is the case. First, it is very clear to the developer that there are potential liability issues associated with any attempt to disturb the hazardous materials beneath the missing link parcel. The developer is not willing to assume those liabilities. Second, it will take a considerable amount of time to study the problems associated with compiling a plan for implementing the solution suggested in the comment, particularly given the documented presence of contaminated material. It seems most unfair to suggest that the Olmsted Plaza development be held hostage while an effective implementation plan is developed, particularly given the fact there is currently no consensus as to what the best long term solution to the missing link should be. Third, there is no apparent source of funding for the suggested design. Preliminary cost estimates are that something in the order of $6 million could be required to safely restore the flow of the river. The Olmsted Plaza concept does not have the financial capacity to support this cost, and at present there appears little chance that public funding for this undertaking exists. Last, it simply seems unreasonable to suggest that the developer should be forced to accept responsibility for a problem to which he in no way contributed.

The developers have, however, taken significant steps that can lead to long term solutions to this problem. They have agreed to have the property transferred from Sears directly to a public or non-profit entity charged with restoring the park to the park system. They have agreed to fund near term improvements that return the park to the park system. These plans entail creating a "dry park" that will be open by July 1992. The developers have committed to programs that will contribute substantial funding for this effort. The developer has also helped establish an advisory committee to oversee renovations to the missing link park. (The Fenway Garden Society is encouraged to seek representation on this committee to ensure that its concerns receive continuing attention.) In addition, the developer has committed $100,000 toward the planning of both the interim (dry) park, as well as for the long term (open waterway) park advocated by the Fenway Garden Society. These commitments to development of a viable park are enumerated in Section 16 of the Cooperation Agreement (Appendix VI).

Taken together, this has to be among the most generous private contributions toward creating usable, attractive open park land in the City of Boston. It promotes a realistic and attractive interim plan, while not precluding the long-term vision for the site.

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FRIENDS of the MUDDY RIVER • BROOKLINE-BOSTON

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13 November 1989

John P. DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Mass. 02108

RE: Public Comments on DPIR/DEIR for redevelopment of Sears Roebuck property at the Fenway, EOEA file no. 7643

Dear Secretary DeVillars:

We appreciate the opportunity to comment on the draft PIR/EIR for this project to be located adjacent to the Muddy River. Since 1980 our organization has worked to improve, restore and maintain the Muddy River and its associated portion of Frederick Law Olmsted's Emerald Necklace park system, in an effort to undo the effects if many years neglect and pollution. We feel there are some key areas in which this document fails to address a problem, or does so incorrectly. Furthermore, the copy of the DPIR/DEIR we received was missing the appendices, and a large number of pages were bound upside down. We looked for Appendix D (section 1.7 says this includes the PNF/ENF) and Appendix E (section 1.7 says this contains a list of required permits).

We might have made additional comments, had we been furnished a complete copy of the DPIR/DEIR. ①

The greatest flaw in the proposed design relates to the Emerald Necklace park, the twin 72-inch conduits enclosing the Muddy River at this location, and the flow behavior of the river as it relates to floodplain and wetlands regulations. Section 4.5.2 discusses the 100-year floodplain, and whether or not the project site falls within it.. Page 4-53 states, "The flood profile graph for the Muddy River near the site conflicts with the boundary denoted on the FIRM (FEMA map). As noted earlier, the Muddy River is culverted opposite the site. According to the flood profile graph in the Flood Insurance Study (fig. 4.5-2) the 100-year flood should be completely contained within this culvert." Obviously the developer would like this to be so.

Figure 4.5-1 (attached, taken from the DPIR/DEIR) represents the FEMA Flood Insurance Rate Map, showing most of the project site to be within the floodplain. We believe this representation to be more correct, for the following reasons:

Although the DPIR/DEIR makes numerous citations from the 1988 CSO Facilities Plan, Tech. Memo. B3-7 (by Whitman and Howard for the MWRA), it ignores hydraulic data for this section of the river which were collected during the 1955 flood. The Whitman and Howard report gives the following data regarding that flood:

(1) The estimated river flow rate was 1300 MGD.

(2) The high water mark opposite the Sears building was 117.6 ft. (MDC datum), higher than the high water level used in the DPIR/DEIR.

(3) Figure 1-4 (copy attached) shows the capacity of the twin 72-inch culverts to be 170 MGD only after cleaning.

(4) Page 1-6 states the 1955 flow rate of 1300 MGD could not have been carried by the culverts ",,,which indicates that some of the flood flow occurred over lan in this area--not through the conduits--and into the Fens."

The FEMA map therefore correctly shows flood flow over land and not confined to the culverts. This should be of great concern to the developers, as potential flood dam to their property would be much greater than for any surrounding properties. Over t long term the prevention of this flooding potential protects the river as well.

A plan had been proposed (in cooperation with the Mass. Dept. of Environmental Management) to remove the 72-inch culverts and restore the river to its original ope channel, similar to Olmsted's original design. We believe this proposal has been evaluated on a purely aesthetic basis, without consideration of the hydraulics of th Muddy River. Much to our dismay we find in this DPIR/DEIR that the plan has been do graded to just a surface park, with planings to "simulate" the path of the riverbed, and leaving the 72-inch culverts in place. No cleaning of the culverts is proposed, even though cleaning is needed just to restore them to original capacity. We can se little point in building a park here if the culverts are left in place. The culvert present a restriction to flood flows which will promote flooding and wash away the p Additional culverts could be built but remember the required capacity of 1300 MGD is almost eight times the existing (clean) capacity of the two 72-inch culverts. Culve are a poor solution because the base flow in the river is so low that deposition in culverts is guaranteed.

Another alternative might be to build a 1.2 billion gallons/day storm water pum station, but this facility would probably be larger than the entire Emerald Necklace parcel. The open channel would be a far easier way to provide this capacity. Even the channel, hydraulic analysis is needed on the short sections of culvert that woul remain in place under roadways. If these under-roadway crossings do not have suffic capacity, improvements must include additional or larger culverts and/or replacement culverts with roadway bridges.

The extremely high flood flows possible result from the large contributing drai area, which includes the major Village Brook and Tannery Brook drain conduits which areas as far away as Boston College in Newton. The Muddy River also receives overfl from the Brookline and Chestnut Hill Reservoirs. This is why the enclosure of the r in culverts at the Sears building was such a mistake in the first place, and why tha mistake needs to be corrected before this project should be built. Without the need flow capacity the Emerald Necklace parcel might as well remain a parking lot, and it would be foolish to build the proposed project within the floodplain.

Section 6.12 of the DPIR/DEIR discusses the proposed Emerald Necklace park, wit figures 6.12-3 and 6.12-4 showing plans to reopen the Muddy River, adding bicycle pa and pedestrian walkways. The DPIR/DEIR then dismisses this plan (page 6-22) because "Reopening the Muddy River, however, is expected to involve lengthy, extensive and c removal of accumulated sediments, much of which may prove to be contaminated." Cons what that statement means. The developers want to avoid the costs of sediment remov from the culverts, even though cleaning is required just to bring the culverts back their 170 MGD capacity. The fact is, if the 1955 flood were to happen today, floodi would be more extensive (due to plugging of the culverts) and might extend beyond th areas indicated on the FEMA map. The developers should be prepared to bear this cos regardless of the findings by EOEA.

The DPIR/DEIR presents a cost estimate of $1 million for the proposed surface park. We feel this amount is unnecessarily high, but probably lower than the cost of restoring the open channel. We are dismayed to find the developers proposing that at least $400,000 of this amount would be provided by an "area fund-raising effort"--in short they say the neighborhood should pay for a share of this park(which won't survive a flood anyway). We feel the developers have reneged on their previous commitment to reopen the river, and this attempt to make the neighborhood share costs is a further example of the developers' "nickel and dime" approach to this problem. With an estimated construction cost of $250 million, the improvements we are requesting represent no more than 1 to 2 percent of the total project cost--certainly far less than the developers expect to profit from this project.

Also the high cost estimate for the surface park appears to be based on an elaborate highly landscaped design which is inconsistent with the rest of the Emerald Necklace, and could end up looking more like a "front yard" for the development than a public park. This is not the intent of the proposal to restore this parcel to the Emerald Necklace.

Since restoration of the Muddy River to open channel flow is essential from a flood-control standpoint, and in the best interests of protecting the developers' property, we feel the developers should bear the full costs of the site work. If a public contribution is to be made it should be limited to landscaping, lighting, benches and other improvements which do not contribute to the solution of the flooding problem. The developer proposes to maintain the park for 25 years. Since the City of Boston adequately maintains the rest of the Emerald Necklace where it falls within city limits, this parcel should be treated in the same way. The park itself should not be highly landscaped but restored to a semi-natural state, consistent with the rest of the Emerald Necklace.

Section7.3.2 of the DPIR/DEIR discusses the existing Storm Drain system and cites the aforementioned 1988 Whitman and Howard report which gives the 72-inch culverts a wet-weather flow cpacity of 170 MGD. The DPIR/DEIR then fails to mention that this capacity will be available only after the culverts are cleaned, and also fails to mention the 1955 flood which is discussed in detail in the Whitman and Howard report. The W&H report also proposed modifications to the Brookline Avenue gatehouse, which currently diverts about 90% of the Muddy River flow directly to the Charles River via the 116 x 120 inch Muddy River conduit. This makes the entire Fens section of the river completely stagnant. The proposed modifications to the gatehouse would redirect the full river flow through the Fens, leaving the Muddy River conduit to function only as a flood overflow. W&H estimated the modifications would cost $400,000 but we feel the work required could be done for less than half that amount since it would entail only reconstruction of the overflow weir chamber. Since the gatehouse abuts the Sears property and the modifications would directly improve downstream water quality, we feel this work should be part of environmental mitigation provided by the developers.

Section 4.5.2 of the DPIR/DEIR erroneously states that the project site is outside the 100-foot buffer zone surrounding existing wetlands. "Wetlands" in this context has been interpreted by Mass. Dept of Environmental Protection to include "historical wetlands" which would include the parcel filled to create the Sears parking lot. ④

Other than issues directly affecting the Muddy River, we would like to offer a number of other comments for consideration:

The proposed Brookline Avenue building could be offices or a 300-room hotel. The decision can significantly impact review of this project, and we feel the use should be defined prior to the public comment and review periods, for the MEPA process to work properly.

Table 7.2-2 indicates evaporative cooling will account for almost 74,000 gallon per day, or 1/3 of the total water consumption of the development during the summer months. Use of non-evaporative systems will increase capital costs, but result in long-term (and ever-increasing) cost savings through reduced water use. It will als reduce strain on the MWRA and BWSC distribution systems, during that time of year when demand is highest. Also toilets should exceed the current 1.6 gallons per flus building code and be rated at 1.0 gallons per flush.

Another aspect of this project's relationship to the surrounding area which is shortchanged is in the area of transportation. The ease of access to this site via adjacent MBTA Fenway station will be a significant marketing asset to the developers especially in an increasingly competitive office space market. Farsignted planning recognize the value of this asset, and include improvements to safety, lighting, and access to the station which has traditionally been accessible via the Sears parking The developers would do well to attract as much pedestrian traffic to the project as possible, increasing the public exposure of the 60,000 square feet of frontage retai space proposed.

Section 2.3 of the DPIr/DEIR (page 2-15) discusses the possibility of incorpora the improved Fenway station into the proposed Park Drive building "...depending on t availability of federal, state and MBTA funding." The current fiscal situation make significant funding from those sources unlikely. The presence of the MBTA station i so significant to the future marketability of this development that the developers s provide the improvements at their expense, including a separate well-lit shelter on Sears property adjacent to the station.

A dark, unsafe and inhospitable MBTA station will only detract from the marketability of the space (especially retail space) as well as denying the neighbor the improvements this project warrants. Here again the "nickel and dime" approach w make this a successful project.

From a regulatory point of view, the location of this site within the floodplai is of greatest concern. Corrective measures are clearly in the developers' best int as well as those of neighbors and abutters. The restoration of open channel river within the Emerald Necklace park could result in removal of this site from the flood as well as providing aesthetic and water quality benefits to the Muddy River. Modif to the Brookline Avenue gatehouse will also benefit water quality of the river. Similarly thoughtful integration of the adjacent MBTA station into the project will directly benefit the developers as well as the neighborhood. We note that the DPIR/ indicates significant commitments to linkage and affordable housing in Boston but th commitments should not be considered in lieu of well-designed connections between th project and the surrounding area and infrastructure. After its completion the succe this project will be judged by its relationship to the river. The improvements we p costing a small percentage of the overall project cost, will improve the ngighborhoo as well as insuring a high marketability for the space the project will create. Everyone benefits.

By this letter, I am requesting that ~~I~~ receive future notices and mailings rela to the MEPA process for this project, and future versions of the PIR/EIR for our rev and comments

Very truly yours,

Isabella M. Callahan

Isabella M. Callahan, President
Friends of the Muddy River

Attachments: (1) FEMA Flood insurance rate map for area taken from fig.4.5-1 of the DPIR/DEIR.

(2) Muddy River Hydraulic Profile, fig.1-4 from CSO Facilities Plan Project P-15, Technical Memorandum B.3-7, submitted 7/20/88 to MWRA by Whitman and Howard.

cc: Peter Shelley, Conservation Law Foundation
3 Joy Street, Boston, Mass. 02108

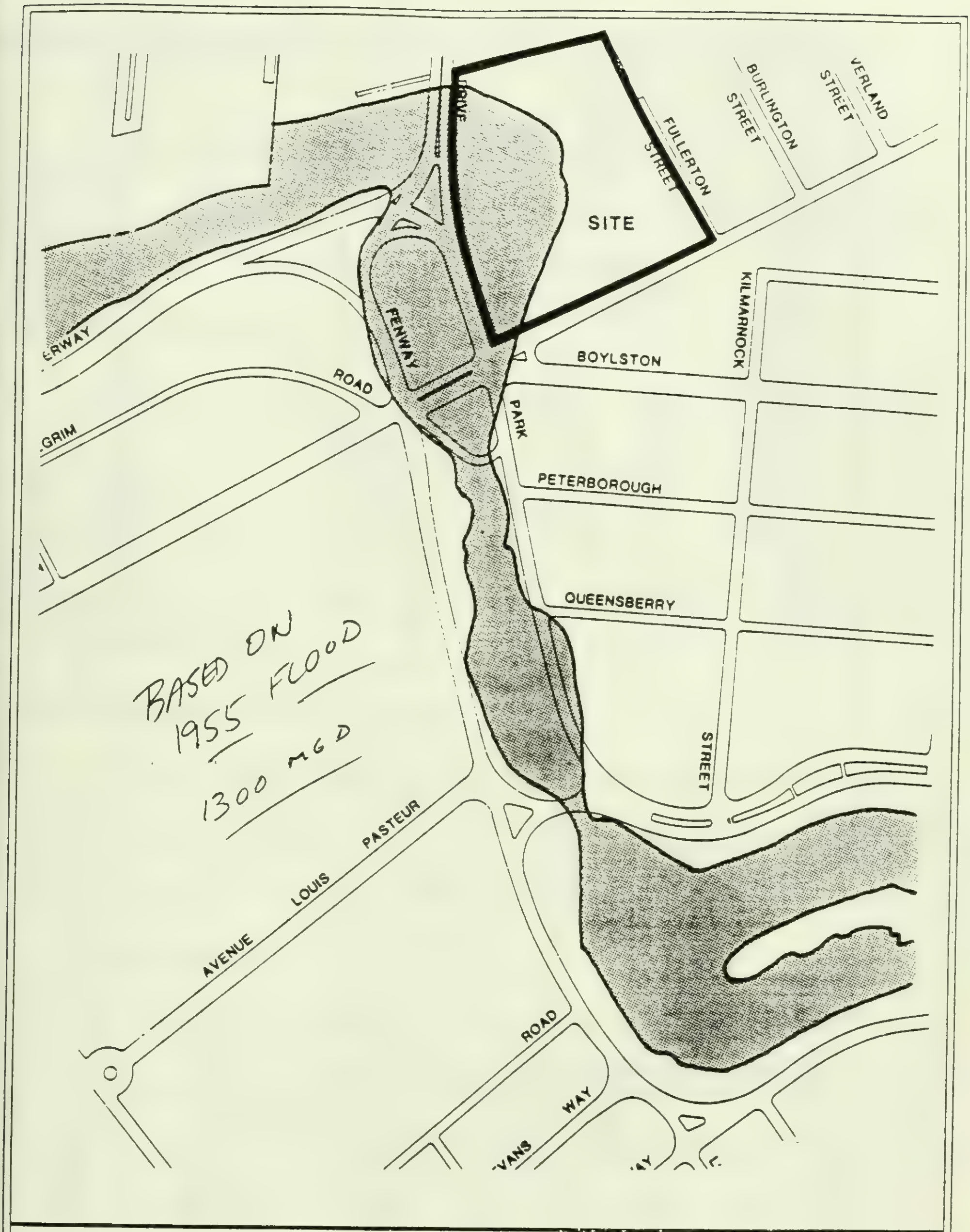
U.S. Army Corps of Engineers, 424 Trapelo Road, Waltham, Mass. 02254
attn: Mike Keegan NEDPL-B

U.S. Geological Survey, 28 Lord Road, Suite 280, Marlborough, Mass. 01752
attn: Russell Gedoury

Federal Emergency Management Agency
John W. McCormack Building, PO-CH, Fourth floor, Room 462, Boston, Mass. 02109
attn: Kevin Merli

Steven Coyle, Director, Boston Redevelopment Authority, Boston City Hall

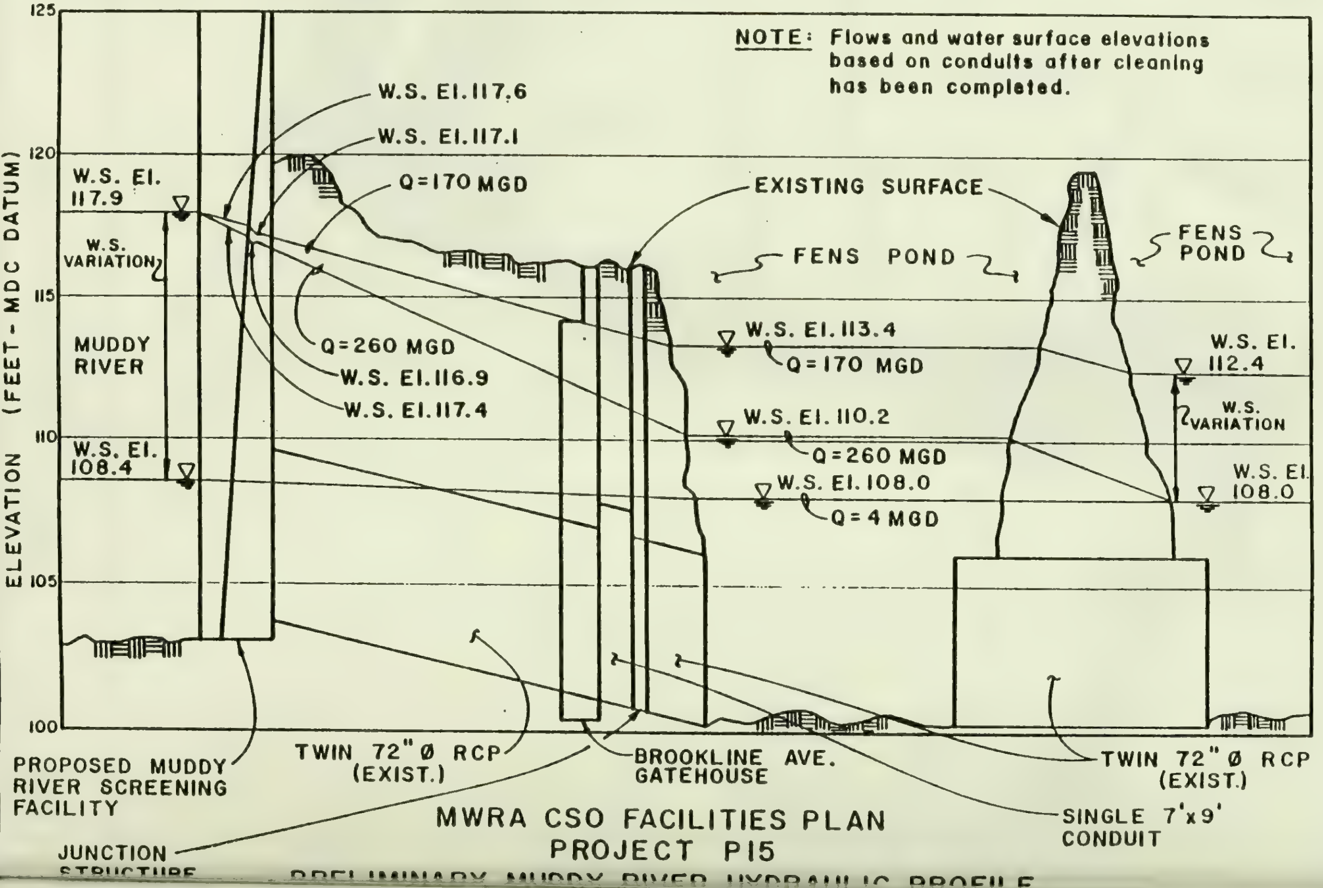
Dave Bingham, Associate, Metcalf and Eddy, Wakefield, Mass.



BASED ON 1955 FLOOD

1300 MGD

FIGURE 4.5-1
FEMA FLOOD INSURANCE RATE MAP



MWRA CSO FACILITIES PLAN
PROJECT P15
PRELIMINARY MUDDY RIVER HYDRAULIC PROFILE

Whitman & Howard, Inc.

Figure 1-4

Friends of the Muddy River 1

The index of appendices to the DPIR/DEIR can be found in Appendix V of this report. No request for any appendix material was refused by the proponent. The appendices remain available for public review. Comments may be submitted, informally, to Olmsted Plaza Associates at any time. Additional formal comments may be submitted during the 30 day public comment period for the FPIR/FEIR.

Friends of the Muddy River 2

The FEMA Flood Map (Figure 4.5-1 in the DEIR) is based on the Flood Profile for the Muddy River (Figure 4.5-2 in the DEIR). The Flood Map is a one inch equals 400 feet scale overview of the Flood Profile data. The Flood Profile is more precise than the Flood Map and was used as the basis for the calculation of potential project impacts. Section 4.5.3 of the DEIR reviews this flooding issue in detail. The 100-year flood elevation on the site is 10.5' NGVD. For information concerning the flood storage capacity of the site, please see MDC 2, BED 2, Appendix VII (Order of Conditions), and the flood storage profile map for the proposed site attached in the map pocket.

Friends of the Muddy River 3

The position of Olmsted Plaza Associates with regard to park designs which restore the Muddy River to the missing link parcel are explained in response to the Fenway Garden Society comment letter. The comment also cites an obsolete description of funding. Commitments to funding park improvements are provided in the Cooperation Agreement (Appendix VI).

Friends of the Muddy River 4

Wetland resource areas were identified using the definitions and criteria found in the Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40) and Regulations (310 CMR 10.00). Wetland Protection Program Policies as published by the DEP were also reviewed. In compliance with these regulations and policies, buffer zone was defined as " that area of land extending one hundred (100) feet horizontally outward from the boundary of any area specified in 310 CMR 10.02(1) (a)." With respect to the project area that includes bank or bordering vegetated wetland. The aforementioned references make no note of the paved areas adjacent to the Muddy River as being considered bordering vegetated wetland. Communications with the Division of Wetlands and Waterways Regulation confirm this interpretation of the regulations. Therefore the mapping as presented in the DEIR should be considered accurate.

Friends of the Muddy River 5

The most recent designs for the Olmsted Plaza project are included in Section 2 of this FPIR/FEIR. Please understand, however, that the environmental review regulations require applicants to describe project alternatives under consideration, preferably before major commitments are made. This was done in the DPIR/DEIR and included the hotel option for the Brookline Avenue Building. This option has been substantially abandoned.

Friends of the Muddy River 6

A closed loop system is to be used.

The developer knows of no area in which a major mixed use development has been asked or required to seek plumbing fixtures with flush rates less than 1.6 gallons. To the best of our knowledge reliable, affordable commercial grade fixtures with better performance standards are not available.

Friends of the Muddy River 7

Section 3 of the FPIR/FEIR contains discussions of the additional transportation studies that have been undertaken since the 155 page transportation study in the DPIR/DEIR was filed. The new report covers commitments to transportation mitigation efforts. In addition, Appendix VI contains a copy of the Transportation Access Plan Agreement between the Boston Transportation Department and the developer. It provides extensive descriptions of the commitments being made by Olmsted Plaza Associates. In general, the developer is committed to improvements associated with the station itself, e.g. platform, access, amenities. For more information, please see letter to Don Kidston, MBTA (December 14, 1989) in Appendix VI.

The Children's Hospital • Boston

300 Longwood Avenue, Boston, Massachusetts 02115 • (617) 735-6000

MEMORANDUM

RECEIVED
NOV 10 1989
MEPA

To: Sarah Hamilton
MASCO

From: David Peck

Date: October 31, 1989

cc: Bruce Peschel, Steve Marsh

Subj: COMMENTS ON DPIR/DEIR FOR OLMSTEAD PLAZA

I have reviewed the Olmstead Plaza Draft Project Impact Report/Draft Environmental Impact Report, and have a few comments. In general, I find it a thorough and comprehensive document which has enormously useful studies of traffic volumes, ① public transit capacity, and other environmental information on our immediate neighborhood. Also, I find the overall development project, and its urban design features, generally well thought out and attractive.

Specific Comments:

1. Table 3.3-2 indicates that the Children's Hospital Medical Center Research Expansion will be complete in 1994. In ② addition, they indicate the Beth Israel Hospital/Children's Hospital additional 200 parking spaces shall be complete in 1994. In both cases, I believe the intent of the table is that these projects will be complete by 1994, not in 1994.

2. Their calculation of daytime vehicle trip generation (page 3.31) assumes 56% of all work trips are "drive alone, car pool and taxi trips"; and 44% are transit (bus, commuter rail, subway) walk bicycle trips". Our own transportation ③ and parking plan posits average proportions of 52.4% driving and 47.6% transit, based on employee interviews. However, the percentage driving varies between 60% for physicians, 64% for managers, 53% for nurses and 33% for technicians. Olmstead's 56% may, therefore, be overstating the number of employees who would be driving, but ultimately it depends on exactly who uses the facility.

3. The Maitland Street connector is discussed on pages 3-37, 3-45, and also on a plan on 10-5. If the developer proposes ④ to include this as part of his project, he must make arrangements with all property owners on those parcels over which this connector would pass. I do not think this has been done yet.

4. Use of Brookline Avenue for construction trucks (pages 3-85 and 3-86) shows using Brookline Avenue for traffic to and from the south. Every effort must be made to have such truck traffic occur in the off hours (as discussed in their demolition trucking paragraphs on 4-95). The Developer's studies of traffic on Brookline Avenue, and the intersection at Brookline and Longwood in particular, suggests that additional construction traffic, during peak a.m. and p.m. hours, would be a difficult burden.

5. With reference to worker parking (page 4-94) I suggest that remote off site parking lots be considered, with shuttle service to the site, to further minimize construction period traffic impacts. I understand that the Harbor Clean Up Project and possibly the Artery Project both have carefully considered use of remote, centralized construction parking and transportation programs.

6. All the shadow studies appear to misrepresent the massing of the Children's Hospital Medical Center building on Burlington Street. In general, however, I do not think their proposed project creates any undue shadow problems at any time of the year.

DBP/kam

Children's Hospital 1

Olmsted Plaza Associates thank you for this comment.

Children's Hospital 2

The table reflects the dates given to HMM Associates by State and City representatives. As a practical matter the date makes little difference since all the traffic from each project in the table is included in the 1995 base case analyzed both in the DPIR/DEIR, and in this FPIR/FEIR.

Children's Hospital 3

The authors of the traffic studies agree with this observation. It also addresses MEPA 11, where the targeted mode split of 44% transit is challenged.

Children's Hospital 4

As reported in Section 3.1 of this report, the Maitland Street Connector is no longer being considered.

Children's Hospital 5

The authors of the traffic studies agree with this observation. Agreements with BTD will include specific requirements for contractors to see that their trucks do not use critical, overburdened streets during AM or PM peak hours. The Construction Management Plan must be submitted and approved before building permits can be obtained. The plan will be a public document (see Appendix VI).

Children's Hospital 6

This particular site is well endowed with paved on- and off-site areas available for construction parking. It is likely that the Van Ness Street parcel and the two temporary on-site lots will be used as parking for construction workers during Phase I of the project. During Phase II, construction workers will use available space in the on-site garage. If that does not provide enough space, a satellite lot will be established at that time.

The Commonwealth of Massachusetts
Metropolitan District Commission
M. Ilyas Bhatti, Commissioner

20 Somerset Street
Boston, MA 02108
617-727-5114

RECEIVED
NOV 13 1989
MEPA

The Metropolitan Network of Services
Parks
Beaches
Community Boating
Historic Sites
Recreational Facilities
Public Concerts
Trailside Museum
Boston Harbor Islands
Metropolitan Police
Flood Control
atershed Management
Pure Water Supply
uabbin, Wachusett and Sudbury Reservoirs
Franklin Park and Stone Memorial Zoos
Parkway, Boulevard and Bridge System
Charles, Mystic and Neponset Rivers
eaver Brook, Blue Hills, Elm Bank, Breakheart, Middlesex Fells, and ony Brook Reservations

November 9, 1989

Ms. Janet McCabe, Assistant Secretary
Executive Office of Environmental Affairs
MEPA Unit
100 Cambridge Street - Room 2000
Boston, MA. 02202

RE: Olmsted Plaza; EOEA #

Dear Ms. ~~McCabe~~ Janet:

The Metropolitan District Commission is pleased to have this opportunity to comment on the above-referenced Draft Environmental Impact Report (DEIR). While this DEIR represents a fine effort on the part of the proponent to address the significant issues that this project raises, many are still outstanding and need to be addressed in a Final Environmental Impact Report (FEIR). The FEIR should address the following:

TRAFFIC

The traffic issues associated with this project are complicated and significant. Some items addressed in the DEIR have been changed since the DEIR was presented as a result of discussions with the BRA. BTD, MDC, and others. While this is commendable, it does lend some confusion to trying to sort out where things stand since the issuance of the DEIR. Specifically, the following needs to addressed in the FEIR: ①

-Queue length data at major intersections under the most recent traffic scenarios was not sufficient and needs to be provided. Ninety-fifth percentile queue length data should be included.

-Short and longer-term impacts on traffic from parking in the circle opposite the project should be addressed.

-Some major intersections need to be more adequately mitigated. In particular, the Chapel Street/Riverway intersection needs to be more closely examined in terms of timing and conflicts between pedestrians and automobiles.

-Roadway drainage problems have been attributed to the project area over the years. The nature of these problems and their connection to and impacts upon the drainage running under the "circle lot" should be addressed in the FEIR. ②

CULTURAL/AESTHETICS

MDC roadways such as the Riverway, Park Drive, and Jamaicaway are part of the National Register's Olmsted Parks System, the "Emerald Necklace". It should be noted when reviewing any comments or proposals related to this project that the MDC strongly wishes to see that these historic landscapes are not compromised. The roadways and adjacent lands are separate in this

MetroParks **MetroParkways** **MetroPolice** **PureWater**

sense from city streets. Maintaining their continuity both visually and physically is important. The proponent has attempted to follow this idea with congruent landscaping in front of the building. This is commendable but care must be taken to ensure that other phases of the project are treated with the same care.

We are pleased that the "circle lot" is to be conveyed to the City of Boston as part of the restoration of the Olmsted Park System. It is regrettable that it is to be used in the interim as parking, however. There should be a definitive termination date for its use as a parking lot and a time line provided for its conveyance and/or restoration to park status.

In concluding, it must be noted that this project is of such a large scale and its impacts so significant that care should be taken in examining it. There must be much more examination and discussion of the project before a Section 61 Finding will be issued by the MDC.

Thank you for this opportunity to comment.

Sincerely,

M. ILYAS BHATTI,
COMMISSIONER

cc: Peter Jackson
Ken Kirwin

MDC 1

Since the filing of the DPIR/DEIR, Olmsted Plaza Associates has continued to work with the BRA, BTD, MDC and others on resolving traffic issues since the filing of the DPIR/DEIR. It will continue to work with these agencies over the next several months. The results of the new analysis that has been undertaken are reported in Section 3 of this report. Each of the traffic issues cited by MDC is addressed. The commissioners of MDC and BTD have established a direct communication to ensure that all MDC concerns are addressed in the mitigation efforts being planned by the City and funded by the developer.

MDC 2

As discussed in Section 4.5.3 of the DPIR/DEIR, the proposed project will result in the reduction of almost two (2) acres of pavement and the development of over an acre and a half of landscaping. These features will reduce the amount of runoff, enhance the ability of the area to attenuate floodwaters and result in a net gain in flood storage capacity.

MDC 3

In response to this, and other similar comments, the developer has committed to completing the park renovations described in Section 2 of this report by July 1992. This commitment is documented in the Cooperation Agreement between the developer and the City (Appendix VI).

COPY

452 Park Drive, #8
Boston, MA 02215
October 20, 1989

OCT 27

Mr. Don Klabin
Boston Redevelopment Authority
City Hall, 9th Floor
Boston, MA 02201

Re: Olmstead Plaza

Dear Mr. Klabin:

I have attended most of the meetings with the developers of the proposed Olmstead Plaza project, including the one on October 5th which was devoted to traffic and parking issues. The presentation by the developers was thorough and ambitious given the state of the traffic problems that already exist in Audubon Circle and the Fenway. That they are concerned about the traffic impacts is evident by their scheduling yet another session devoted to transportation issues.

However, I must comment on some important aspects of their proposal to mitigate traffic during peak hours approaching the site.

The developers propose to "limit" parking at 10 spaces along the south side of Beacon Street in order to create two right turn lanes onto Park Drive. (See DPIR/DEIR, September, 1989, p. 3-68) That block (between Keswick Street and Park Drive) is resident parking, a fact that the DPIR/DEIR fails to state. It is posted as Resident Parking and must not be limited. I believe that the developers and their traffic "experts" have lost sight of the meaning of ①
resident parking. Resident parking is intended for residents of the neighborhood to park, unrestricted, especially during peak hours when traffic is coming into the city. It is unthinkable to remove resident parking to mitigate traffic impacts of any proposed project. You can "limit" incoming traffic, but residents of the area, should never be limited to accommodate incoming traffic.

There is also an error in Figure 3.13-1 "Existing Parking Supply Inventory" (p. 3-134). They have shown the entire left side of Medfield Street as resident parking
when, in fact, the first block of Medfield Street is visitor ②
parking and is posted as such. You will note from this map

that there is not a great surplus of resident parking in Audubon Circle. Most of the resident parking on Buswell and Mountfort streets are contained within the Boston University dormitory area and is generally lost to other residents of Audubon Circle. Presently, resident parking is hopelessly inadequate for the density of the area and the proposed project will make it more so.

The developers' offer of garage parking for residents is ludicrous. To make parking available only from 6 p.m. to 7 a.m., for a fee (no matter how modest), in an area where there is already inadequate parking is not much of a neighborhood benefit. Where will people who do not fit the typical "9-5" profile put their cars when they have to vacate the garage at 7 a.m.? Where will they put their cars before 6 p.m.? In addition to limiting paid-for resident parking in their garage, they further propose to restrict resident street parking in 10 spaces from 7-9 a.m. and 4-6 p.m. These restrictions on parking for area residents need to be addressed in the final PIR and EIR.

The developers have itemized other development projects planned for the next several years in the immediate and adjacent areas of the proposed site. They list the Boston University Armory project as 1,200 student beds. What they fail to include is the 8,500-10,000 seat arena for university and non-university events on that same site. Surely this will have a major impact on traffic and parking and must not be dismissed as a "student dorm" which diminishes the impact of the entire project.

Also, listing the future development plans of the Longwood Medical Area to add square footage and some parking spaces does not convey the true impact on traffic in the area. MASCO has admitted that the proposed development in this area will result in 9,000 more automobiles, a significant impact for the neighborhood to absorb. Of course, as plans are not yet in place for the Kenmore Square redevelopment, there is can be no assessment of impacts that Kenmore Square projects might create and this requires some comment from the developers and the BRA.

My comments should is not be construed as an acceptance of the rest of the proposed project simply because it is confined to traffic and parking issues. There are other serious impacts that need to be addressed. However, they will be the subject of other meetings and letters. Thank you for your attention to these issues.

Sincerely,

Barbara McKinley

Barbara K. McKinley

McKinley 1

The current plans for improving traffic flow are included in Section 3.4 of this FPIR/FEIR. That section also includes current mitigation proposals. Commitments are further discussed in Appendix VI, the Transportation Access Plan Agreement. The developer agrees that one of the potential impacts of the project is the loss of some of the curb side parking spaces. It is felt, however, that the loss of a very modest number of resident spaces is justified by the significant improvements in traffic flow that will result. Note that the City has the option of moving the sidewall to maintain parking spaces. This, however, is a fairly expensive measure.

McKinley 2

Since the visitor parking area is designated for the visitors of local residents, we classified it into the restricted parking category for the purpose of parking analysis. Aside from the parking situations described in the letter, the HMM study has shown that the parking demand in the Medfield Street area is in the range of 50 to 93 percent of the capacity, which is clearly illustrated on page 3-137 of the DPIR/DEIR.

Regarding the existing residential parking conditions in the area, the developer has committed to provide its parking facilities to local residents at off peak times (see Section 3.7). This will help relieve the on-street residential parking demand experienced now.

McKinley 3

Resident parking hours have been expanded to 5 P.M. to 9 A.M. (see Section 3.7.1). These additional efforts undertaken by the developer to accommodate off hours parking by residents should be satisfactory. Many in the neighborhood will appreciate the opportunity to have access to inexpensive, safe parking at night. It should be noted that the number of available spaces for off hours resident parking is much greater than the number of resident spaces being sacrificed. It should also be noted that the plan to improve traffic flow at Audubon Circle is badly needed, with or without the project, so blaming Olmsted Plaza for the perceived loss may not be particularly realistic. At least the project includes some means to reduce the impact of this loss.

McKinley 4

The peak hours of traffic generation for a land use such as an arena typically occur from 6:30-8 PM and 9-10 PM. These times correspond to patrons arriving at and leaving functions occurring at the facility. Since these times are outside of the peak hours of the proposed project as well as the surrounding street network, the traffic impacts of the arena will not be significant.

RECEIVED
NOV 13 1989
MEPA

MS. Connie Getek
MEPA Unit/EOED
20th Floor
100 Cambridge Street
Boston, MA

Sat, Nov 11, 1989

Dear Ms. Getek,

The undersigned represent the Boards of Managers for the condominiums at 452 and 448 Park Drive. We are writing to comment on the proposed development of the Sears Site by Olmstead Plaza Associates, a joint venture of JMB Urban Development and Macomber Development Associates. We understand that the developer has an excellent reputation based on their prior work in the Boston area, and are pleased that they have voluntarily submitted the proposed project for Article 31 approval, including input from the neighborhood. We look forward to the return of the Missing Link of the Emerald Necklace Park system, and the restoration of the Sears Building to its former glory.

Nevertheless, we have serious concerns about the impact of the proposed project on the quality of life in our neighborhood. We are particularly concerned about the scale of the proposed Park Drive building and the impact of the project on traffic and parking in the area.

The Proposed Park Drive Building

Although the developers have reduced the height of the proposed Park Drive Building to that of the existing main building, we are still concerned about a building of this size being placed so near neighboring residential buildings and Park Drive. The existing Sears building is already much larger than the neighboring structures but works as a positive landmark because the visual transition is softened by the distance the building is set back from both the street and other buildings, as well as by the low elevation of the Sears site compared to its neighbors on Park Drive.

① In contrast, placement of the large building on Park Drive will lead to an abrupt and jarring transition from the neighboring three and four story residential buildings on Park Drive. Shadows from this building will block morning sunlight and skylight to our buildings, which are on the opposite side of Park Drive. It will also shade the street itself, which is a wide boulevard with considerable open space and is currently pleasantly sunny. We feel that the visual and shadow impacts of the Park Drive building have a serious negative impact on the character of the neighborhood. We are not opposed to building on this part of the site; however, we would like to see a transition from the neighborhood to the project, not a dividing wall.

We recognize that the scale of the project is determined by the developers legitimate interest in maximizing the return on their considerable investment. The developers have already made some reductions in the proposed size of new buildings in response to neighborhood concerns. Nevertheless, we are still concerned about the density of the buildings on the site in the latest plan. We suggest that further reduction of scale would benefit the developers as well as the neighborhood insofar as the attendant improvements in accessibility, parking availability, open space between the buildings, and aesthetic fit with the neighborhood will make the project more desirable to potential tenants.

Traffic and Transportation Impacts

Several of us attended a meeting on October 30 to hear the Boston Transportation Department's assessments of the impact of the various projects, including the Olmstead Plaza proposal, on traffic and transportation in the area. We are concerned about how traffic problems might affect access in the area, especially to the many hospitals.

We were disturbed by the Department's poor preparation and its uncritical acceptance of the studies done by the various developers' consultants. Traffic and transportation facilities in the area are already overburdened without the Olmstead project. Studies submitted in the draft EIR seriously underestimate volume, and ignore many of the effects on pedestrians and bicycle traffic.

Mitigating measures should be taken and evaluated before the project begins to affect traffic. Many of the proposed measures to mitigate the situation rely on a coordinated effort involving the MDC, the City, the MBTA, the hospitals, and the City of Brookline. Given the number of projects, agencies, and jurisdictions involved, we believe that a comprehensive areawide transportation plan is badly needed to avoid permanent gridlock. Major construction, if not approval, of any new projects should be held in abeyance until such a plan can be implemented.

Parking Impacts

We were pleased to learn that the developers have revised their parking plans to place some of the parking for the project in a second structure on the Van Ness site, which is in a less residential neighborhood. Placing part of the parking at the Van Ness site will reduce traffic in the overburdened Sears Rotary by allowing some of it to be diverted toward the Storrow Drive ramps, and will be better suited to provide parking for Red Sox games at Fenway Park.

Our reading of the EIS suggests that even with both of the planned parking structures, the project will not have enough parking spaces to handle the anticipated tenants and their customers. This can only lead an increase in illegal parking in Resident Parking spaces in the Audubon Circle area, which is already seriously oversubscribed. Further, some of the proposed solutions to traffic problems will also reduce the number of parking spaces in the area. We feel that the proposal by the developers to provide leased rental spaces for nonbusiness hours is too inflexible to be of any real value as a replacement for Resident Parking.

We strongly recommend that the BRA ask the developer to continue to refine parking plans to reduce problems in the neighborhood. One possible measure would be to work with the owners of abutting sites and the Red Sox to enlarge the Van Ness site. We also believe that improved coordination between the City and the MDC is needed to achieve better enforcement of parking regulations in the neighborhood.

As residents of the Audubon Circle neighborhood, and one of the site's closest neighbors, we hope that development of the Sears site can be achieved in a way that will enhance the quality of life in our area. We believe that the developers share these goals and is making a good faith effort to achieve them. However, we are concerned that the present proposal contains potentially serious flaws, including those outlined above, and are disturbed by our sense that in the rush to complete the approval process in a short time, important issues involving the area are being overlooked.

Beyond the specific effects that might make our neighborhood a less pleasant place, we fear that these same problems could affect the ability of the development to attract quality tenants. A failed development on this scale benefits neither the City, the neighborhood, nor the developers themselves, and could be far worse than living with the Sears building in its current abandoned and desolate state.

We therefore urge the BRA to join us in asking the developers to reevaluate the question of how large a project the area can realistically support without disrupting the neighborhood. We hope that the BRA will see to it that approval of the project is conditional upon ongoing reevaluation of its impact, and that input from appropriate groups and agencies, including the neighborhood, will be given consideration before Phase 2 construction plans are finalized. We also hope that the developer will submit to reevaluation of Phase 2 after Phase 1 is completed, when its real effects can be determined with more certainty.

Thank you for your attention to these matters. We look forward to working together with the developers to assure the ultimate success of the project.

Sincerely Yours,

Vernon Ellis,
452 Park Drive Condominium Assoc.

Julia Daggett
Julia Daggett
448 Park Drive Condominium Assoc.

Timothy Robinson
Timothy Robinson,
452 Park Drive Condominium Assoc.

Nancy Grynkiewicz
448 Park Drive Condominium Assoc.

Jim Hu,
452 Park Drive Condominium Assoc.

Mike Lamarre
448 Park Drive Condominium Assoc.

cc:	Don Klabin	BRA
	Connie Getek	MEPA unit/EOED
	James Keefe	Trinity Financial

448/452 Park Drive 1

In response to neighborhood concerns the Park Drive Building has been reduced considerably in size through a series of changes. During an extensive community review process, it was shortened originally from 16 to 12 stories, and subsequently to nine to match the parapet of the Sears Building. Its mass was reduced from 300,000 gsf to 227,000 gsf. In late November, the building was further reduced in size and mass from 227,000 gsf to 223,000 gsf. These changes are described in Section 2.1. We trust these reductions are responsive to this concern.

The shadow diagrams and artists renderings alike show that shadow impact on 448/452 Park Drive will be relatively modest. In the worst case analyzed there are some limited net new shadows for a short time in the morning. These should not be perceived to detract from the quality of life at 448/452 Park Drive. On the contrary, the developer fully expects that quality of life should be enhanced by replacing a vacant, decaying property with a new, and active use that includes many amenities that will be available to the residents of 448/452 Park Drive.

448/452 Park Drive 2

The characterization of BTD reviews as "uncritical acceptance" of work by the developer's consultants is far from accurate. Neither the BTD or the consultant see any validity to such a statement. While the working relationship has been cordial, rather than antagonistic, BTD has thoroughly reviewed all the work by HMM Associates. The consultant has been directed to undertake a substantial amount of new work as a result of that review. The new work is contained in Section 3 of this report. The supplementary work includes new analysis and traffic mitigation plans. The Transportation Access Plan Agreement and the Cooperation Agreement, which are attached as Appendix VI, contain the "plan" to see that traffic impacts are minimized.

448/452 Park Drive 3

Additions to the original parking analysis are included in Sections 2.1 and 3.7 of this report. The new material describes the new, split parking concept. Contrary to the statement in the comment the DPIR/DEIR did not, and the FPIR/FEIR does not, conclude that there will be a shortage of parking to accommodate Olmsted Plaza uses. Supply barely exceeds demand, which is as it should be in order to encourage the use of public transportation, rather than automobiles.

Charles River Watershed Association

October 5, 1989

Mr. Donald Klabin
Boston Redevelopment Authority
Boston City Hall, Ninth Floor
City Hall Plaza
Boston, Massachusetts 02201

RE: Olmsted Plaza Redevelopment

Dear Mr. Klabin:

The Charles River Watershed Association has reviewed the progress of the proposed Olmsted Plaza Redevelopment with particular interest. By proposing to restore a parkland connection between the Back Bay Fens and Muddy River, the developer has offered the City of Boston a unique chance to rectify a previous abuse of public open space. However, in negotiating the final form of the restored park, this gesture must not allow development pressure to enjoy influence above that of neighborhood and environmental concerns.

Emerald Necklace Restoration

The City must look beyond the borders of the Sears parcel when considering proposals to transform the paved lot into a park. Reclamation of the Sears parking lot is key to achieving overall Emerald Necklace and Muddy River Restoration goals.

The cooperative venture between the City of Boston and Olmsted Plaza developers provides a way to secure public parkland in the face of budget restraints. The City must ensure that public and private interests in final parkland design conform to historic Olmsted tradition and the recommendations of the Muddy River Water Quality Improvement Study.

Current Parkland Proposal

The Charles River Watershed Association is disturbed that the current parkland proposal calls for the use of botanical plantings to "simulate" the course of the Muddy River. This design plan directly conflicts with the goals set forth by Emerald Necklace Restoration planners.

Plans to transform the Sears parking lot into public parkland must be sensitive to Olmsted's original design. They should be ambitious and strive to achieve continuity between the

2391 Commonwealth Avenue, Auburndale, Massachusetts 02166 Telephone (617) 527-

Back Bay Fens and Muddy River parks. The property must not be compromised to a botanical surface park; it deserves to be reclaimed as a representative part of a national treasure.

Frederick Law Olmsted took great care to enhance park design with sculpted landscapes and precise plantings. Not only does the current proposal lack historically appropriate plantings and walkways, it also creates a burden for the City. The planting beds will require long-term care and maintenance. The annual plantings that will be required to "simulate" the river every season must be funded.

Muddy River Improvement

At the heart of Emerald Necklace and Muddy River Restoration plans has been the dual goal of **reconnecting parkland and reconnecting waterways.** Restoring continuous flow throughout the park system, from the spring-fed Jamaica Pond to the Back Bay Fens, is essential to park improvement. Indeed, returning the Muddy River's natural flow has been recognized as "paramount" to achieving overall parkland restoration goals.

In guiding the design of the Sears parcel, the City must consider the fate of water quality in the Muddy River and Back Bay Fens. Keeping the Muddy River diverted, with minimal flow to the Fens culverted and obscured under new parkland, will neither hide nor solve water quality problems.

The existing conduit system hinders cleanup of the Muddy River during emergencies. Oil spills are especially difficult to contain. This conduit system is also time and money intensive, requiring regular cleaning, maintenance and repair.

The Back Bay Fens currently receives only wet weather flow from the Muddy River and stormwater/sewage inputs from the Stony Brook conduit. In fact, approximately ninety percent of the Muddy is culverted right into the Charles. As a result, the Fens are stagnant, polluted and smothered by aquatic weeds and algal blooms.

The present deplorable water quality conditions of the Muddy River and Back Bay Fens must not be allowed to remain. Reinstating the natural flow of the Muddy River through the Fens is essential for improving water quality. Increasing the volume and flow of water through the Fens will also increase its aesthetic and habitat values. Recognizing these benefits, returning the natural flow of the Muddy River through the Fens has been a central element in Emerald Necklace Restoration plans. It is also expected to be a major recommendation of the Muddy River Water Quality Improvement Study presently being conducted by the state.

Moreover, no solution to improve the water quality of the Charles River Basin will be complete without improving the condition of the Muddy River and Back Bay Fens.

Toxicity tests must be performed to determine the quality of sediments before plans to excavate the Sears parking lot and reinstate the natural flow of the Muddy River are dismissed. The fear of toxic sediments must not govern decisions made at this time.

Conclusion

Current plans to create a surface park with complex botanical plantings requiring constant care on former Olmsted parkland in conjunction with the Sears building redevelopment violate Olmsted tradition. These plans will also impede efforts to improve flow and water quality in the Muddy River and Back Bay Fens. The Charles River Watershed Association urges the City of Boston to reconsider these plans, in light of the importance of the Sears parcel in overall Emerald Necklace restoration.

Thank you for your consideration of these comments.

Sincerely,

Karen I. Pelto

Karen I. Pelto
Environmental Assistant

KP:kp\olmspark.kip

cc: Boston Parks and Recreation;
Brookline Recreation;
Boston Conservation Commission;
Brookline Conservation Commission;
Friends of the Muddy River;
Boston GreenSpace Alliance.

Charles River Watershed Association

The revised plans for the short term restoration of the missing link parcel are outlined in Section 2 of this report. Many of the design features to which CRWA objects have been eliminated in the revised design.

Olmsted Plaza Associates believes it has made significant contributions to initiating the return of the missing link to the park system. These efforts include seeing that the parcel is conveyed from Sears to a not-for-profit entity that will oversee park renovations, sponsoring designs for interim improvements to the park, helping establish a committee to provide guidance in the redesign of the park, and providing significant subsidies for the near term park improvement (See Figure 2-4).

Further comments on this issue are provided in the response to the Fenway Garden Society.

Boston-Fenway Program, Inc.

236 Huntington Avenue
Boston, MA 02115
617-262-0060

Mr Don Klabin
Boston Redevelopment Authority
City Hall, Room 933
Boston, MA 02201

1 November 1989

RECEIVED
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MEPA

Secretary of Environmental Affairs
Attn: MEPA Unit
100 Cambridge Street, 20th floor
Boston, MA 02202

RE: Comments on Draft Project Impact Report/Draft Environmental Impact Report for Olmsted Plaza Redevelopment

Gentlemen:

On the 20th of July our organization commented in writing on the Project Notification Form. Our views are unchanged since that time, that is that the project will have benefits to the residential, business and institutional community that outweigh the costs (which we see as primarily traffic-related). We would like to quote from that earlier letter:

> We believe it is desirable to have the Sears property once again productively and actively used. We support the preservation and restoration of the original building and the demolition of the latter additions. We believe that the proposed type and mix of uses are appropriate and will have benefits for the local and regional business community, the local residential community and the local institutional community. We support the upgrading of the MBTA Fenway Park station and recognize that that is most likely to occur as a result of this project. We especially are supportive of the return of the parking lot to public park use. The housing and job training aspects of the public benefits package represent positive contributions to the Fenway community.

Our views on this project might very well be different if the site was vacant and undeveloped. It is, of course, densely built upon although the structures are now essentially unoccupied. This proposal aside, the structures, certainly the Sears building itself, will in time be re-occupied (which we believe to be to the good). Consequently, we see the adverse impacts of the project, particularly those that are access- and traffic-related, as an acceptable price to pay for the rejuvenation and improvement of the Sears complex, especially in light of the scaling down of the project which has occurred in recent months.

Although we consider ourselves in support of this project, we do have several comments to make most of which are minor:

1. The Neighborhood Map (Fig 2.2-3) should have the East Fens named. ①
2. Will the developers contribute financially in the improvement to the Fenway T stop? This was asked in our letter of July 20th but remains unclear. ②
3. On Page 3-74 there is a discussion of Intersection 16 (Evans Way/Fenway/Louis Prang). The traffic signals at this intersection are presently set as flashing lights; the discussion suggests otherwise. There is now a dangerous situation for those travelling eastbound at this intersection: the flashing red light is ignored by virtually all drivers and should be enforced or changed. ③
4. The paragraph at the bottom of Page 3-77 seems to be a key observation which if concurred with by persons more expert in traffic analysis than us is worth highlighting. ④
5. Figure 3.11-1 (Transit Routing Map) should include the Southwest Corridor and the Arborway and Boston College Branches of the GreenLine. These might also be noted in the accompanying discussion. ⑤
6. The figures in Table 3.11-4 (Page 3-95) regarding the Fenway Park Station seem contrary to our observations. Were these counts done during the summer months? If so, this should be noted. ⑥
7. The increase in landscaped areas and decrease in paved areas as shown in Table 4.5-4 is commendable. ⑦
8. On Page 5-6 in the opening line of section 5.5 the statement is made that "The Sears Building is the most noteworthy architectural feature of the Fenway district." A more accurate wording would be "...is among the most noteworthy architectural features..." It's a good building but not that good! ⑧
9. In Figure 5.5-4, there is no indication of pedestrian circulation or access along the north edge of the site. We assume this is an oversight. ⑨
10. At the bottom of Page 6-1 (and in Figure 6.1-1) the Gardner Museum does not appear and should. This was also noted in our letter of July 20th. ⑩
11. On Page 6-7 on the third line from the bottom: Fenway Park opened in 1912 (first game: April 20th). ⑪

12. We, of course, support the reintroduction of the parking lot site to the Emerald Necklace and look forward to working with the developers, the Parks Department and other interested parties in seeing this ⑫ accomplished. As we observed in our letter of July 20th, we question whether the necessary $400,000 can be raised locally and suggest that further thought be given to how the restoration can be implemented.

Sincerely,

Robert B. Stephenson
Director of Planning

xc: Mr Patrick A. T. Lee, JMB/Urban Development
Mr James G. Keefe, Trinity Financial
Emmanuel College (Edward Duprez)
Gardner Museum (Anne Hawley)
Simmons College (William Holmes)
MASCO (Rob Tassinari)
Kenmore Association (Lori Gordon)
Boston Parks & Recreation (Ellen Lipsey)
Mayors Office of Neighborhood Services (Ed Burke)

Boston-Fenway Program 1

The authors apologize for the oversight. A copy of Figure 2.2-3, with an East Fens label added, is included in Appendix V of this report.

Boston-Fenway Program 2

Olmsted Plaza Associates is prepared to contribute financially to the upgrading of the Fenway Park "T" stop as part of the second phase development. The specific improvements and associated costs are presently being negotiated pending operating and engineering studies of the station which are currently being undertaken by the MBTA. See responses to the MBTA letter of comment (Appendix VI).

Boston-Fenway Program 3

Some of the signal permits that were obtained from the MDPW proved to be obsolete. This intersection is one of those. The Evansway/Fenway/Prang signal is currently in the red/yellow flashing mode. The following improvements are recommended at this intersection:

- The signal should operate normally from 7 AM to 7 PM, and return to red/yellow flash mode at night.
- This signal should be interconnected with the Huntington/Ruggles controller via a time base coordinator or a hard wire interconnect so that they run in unison.
- The cost for these improvements is approximately $5,000.
- As compared to the No Build, the AM Build LOS will improve from LOS E to LOS C, and the PM Build LOS will improve from LOS F to LOS B.

Boston-Fenway Program 4

To date, no agency with traffic expertise has stated any disagreement with this conclusion. Instead the knowledgeable agencies are working with the project proponent to refine mitigation measures to help make sure the predicted improvements do, in fact, take place.

Boston-Fenway Program 5

The Orange Line and E and C branches of the Green Line are noted where applicable in the text of Section 3.

Boston-Fenway Program 6

The figures in Table 3.11-4 do reflect counts taken during the summer months. As stated at the bottom of page 3-90 "... on-site surveys of D Line operations were conducted on June 22nd, for the PM peak period, between 4 and 6 PM, and on June 23rd for the AM peak period, between 7 and 9 AM".

Included in Appendix V of this report, is a table that provides some insight into seasonal variation in MBTA ridership.

Boston-Fenway Program 7

No response solicited.

Boston-Fenway Program 8

The choice of the wording "most noteworthy architectural feature" might well be revised to state "most widely recognized, noteworthy building". The statement was not meant to imply that the building is the best example of architecture in the Fenway. That is a subjective judgment best left to be made by each amateur architectural critic individually.

Boston-Fenway Program 9

The observation is quite correct. An amended version of Figure 5.5-4 is included in Appendix V.

Boston-Fenway Program 10

The Gardner Museum is noted as a historic site in Appendix V.

Boston-Fenway Program 11

This correction is noted and acknowledged.

Boston-Fenway Program 12

The developers have recently agreed to take a leadership role in raising the balance of funding needed to complete the park. See Section 16 of the Cooperation Agreement included in Appendix VI. In addition, permits required for commencing the second phase of the project will be linked to the park being completed.

CG

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K A F N I
Kenmore, Audubon Circle, Fenway Neighborhood Initiative
P.O. Box 127, Astor Station, Boston, MA 02123
(617)267-4637

November 12, 1989

Mr. John deVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street - 20th floor
Boston, MA 02202

Att'n: MEPA Unit - Connie Getek

RE: Olmsted Plaza DPIR/DEIR, EOEA No. 7643

Dear Secretary deVillars:

We are writing to you as the members of Sears Redevelopment Committee of KAFNI (the Kenmore, Audubon Circle, Fenway Neighborhood Initiative) to comment on the DPIR/DEIR for Olmsted Plaza.

KAFNI includes representatives from: the Fenway Community Development Corporation, Audubon Circle Neighborhood Association, Symphony Tenants Organizing Project, Fenway Civic Association, Gainsborough Neighborhood Association, Symphony United Neighbors, Kenmore Residents Association, Symphony Area Renaissance, Joint Committee on the Northeastern Master Plan, and unaffiliated neighborhood residents and business owners.

KAFNI's objective is to unite residents around a common vision for the future of the neighborhood. Using a democratic planning process, KAFNI will develop a Master Plan addressing development, zoning, and quality of life concerns. KAFNI's first priority is to maximize resident participation in neighborhood affairs. As representatives of this group, our objective is to portray accurately and advocate for residents' concerns and issues regarding the proposed redevelopment of the Sears site.

We applaud Olmsted Plaza Associates for their sensitivity to the proposed development's impact on the neighborhood. They have been accessible to residents, and they have made sincere efforts to address some of the residents' primary concerns.

Nevertheless, as the deadline for City and State approval of the development rapidly approaches, many issues of great concern to neighborhood residents remain unresolved. Olmsted Plaza, given its scale, will change the face of the neighborhood dramatically. It is therefore with a sense of urgency that we present our response to the DPIR/DEIR.

PUBLIC REVIEW OF DPIR/DEIR

The DPIR/DEIR does not contain the Housing or Employment Impac reports. This deficiency makes it difficult for us to respon adequately to the development proposal as a whole.

Further, we object to the short amount of time that the DPIR/DEI was available to the public for comment. Exclusive of th missing housing and employment impact analysis, the repor contains 365 pages of technical data. The community should hav received at least 30 days, as required by City procedures, t evaluate adequately the entire proposal. For example, citizen reviewing the environmental reports for other large projects i the Boston area such as the Prudential redevelopment received 6 days to comment on the documents.

Because the report is incomplete, and because of the inadequat amount of time the report was available for public comment, thi letter does not represent our final thoughts on the proposal. W reserve the option to submit additional comments on th DPIR/DEIR in the future.

HOUSING LINKAGE FUNDS

Olmsted Plaza will have a significant impact on the housing market in Audubon Circle, the Fenway, and Kenmore Square. KAFNI adamantly maintains that the best way to mitigate these impacts (which include higher costs, displacement, and greater density) is to target linkage funds from the development to the neighborhood.

This can be accomplished either through the "Housing Creation Option," or through a set-aside of funds similar to the model used in the Chinatown neighborhood. To date, no City linkage funds have been invested in Fenway, Audubon Circle, or Kenmore Square. Given the already critical need for affordable housing in the area and the added burden that Olmsted Plaza will place on the housing market, we strongly advocate this direct targeting.

Specifically, linkage funds should be invested in the following projects:

Boston University Property

KAFNI feels strongly that a portion of the linkage funds should be used to purchase housing units currently owned by Boston University in the Audubon Circle area and convert them into mixed-income housing. Approximately 250 units are currently available to B.U. students in the Audubon Circle neighborhood. Without housing linkage funds this opportunity to expand the availability of affordable housing in the neighborhood will be lost. We call on the City and the Olmsted Plaza developers to financially back this critical project, which will increase neighborhood stability and improve residents' quality of life.

Unfortunately, it may take more than linkage funds to make the conversion of B.U. owned properties a reality. Negotiations between the neighborhood and B.U. have persisted for some time, and while the University has expressed its willingness to sell the properties, we still lack a formal agreement.

The community's endorsement of the Olmsted Plaza development hinges on a resolution of the neighborhood's negotiations with B.U. For Audubon Circle, the most effective means of mitigating the impacts of Olmsted Plaza will be to increase amount of mixed-income housing in the area. Therefore, the City and the developers should facilitate an agreement between the neighborhood and B.U.

Perhaps the most effective option for reaching a resolution of this issue would be to have the developers offer to purchase the Audubon Circle properties from B.U. for their current fair market value. Developers would work with KAFNI and Audubon Circle Neighborhood Association to select a non-profit developer to re-sell the properties to at a price that allows for the development of affordable housing.

Peterborough Street

We support the proposal to develop affordable housing on Sears-owned Peterborough Street parcel. However, in light of shrinking State and City budgets for producing affordable housing, linkage funds will be critical for making this proposal a reality. ③

Further, the value of the Peterborough Street parcel should not count toward the developer's contribution to the City's linkage fund; we believe that the parcel should be considered a direct contribution from the developer to the neighborhood to mitigate the impacts of the project to protect neighborhood quality and stability.

INTEREST BUY-DOWNS AND DOWN PAYMENTS

The Olmsted Plaza developers have stated a willingness to transfer the net income from the parking lot on Peterborough Street for two years to a program to assist residents in becoming homeowners. While home ownership is an important objective, we ④ feel the current proposal overlooks the fact that a very high percentage of the housing available in the area is rental. Further, an emphasis on home ownership precludes serving low-income residents; even with the type of assistance suggested, inflated housing costs in the area will preclude home ownership as an option for many households.

Therefore, we urge the developer to work with neighborhood residents and organizations to design a program that takes into account the type of housing stock available and the needs of the neighborhood's low- and moderate-income residents.

EMPLOYMENT

We have two primary issues regarding employment at Olmsted Plaza. First, neighborhood residents should be targeted for employment by tenants of Olmsted Plaza. Second, employment linkage funds should be used to help meet the training and employment needs of residents.

A high percentage of jobs created by the development should be set aside for neighborhood residents. A jobs-for-residents policy will serve two important functions. It provides a perfect opportunity to link job training efforts that are created with linkage funds to the availability of jobs in the neighborhood.

Hiring neighborhood residents also reduces the development's negative housing and traffic impacts. Clearly, employees already living in the neighborhood would not increase the demand for housing. Similarly, neighborhood residents - who would not need cars to get to work - would decrease the demand for parking and would not contribute to the area's already overburdened streets.

The developer can ensure that neighborhood residents will be guaranteed a percentage of the jobs generated by Olmsted Plaza by placing lease restrictions on the project's tenants. These jobs should cover a range of income opportunities and job types. That is, in order to rent space at Olmsted Plaza, a tenant would have to set aside slots for current residents.

Second, employment linkage funds should be targeted to the neighborhood. The area's low median income points to the need for employment training and employment opportunities for residents.

TRAFFIC AND PEDESTRIAN ACCESS

While the proponents have presented an extensive traffic analysis, we have two primary concerns regarding the study.

First, the analysis significantly underestimates the amount of traffic that will be generated by the project. Second, the viability of the traffic mitigation plan is uncertain, as many of the plan's components rely on action by either the City, the State, or the tenants of Olmsted Plaza. The following sections describe what analysis we would like to see in the final report.

Current Conditions Analysis

The proponents conducted their traffic counts during June, July, and August. Traffic in the area increases markedly in September after colleges and universities open in Boston and the summer vacation ends. We would like to see the proponents recount key intersections, or propose a method for seasonally adjusting the traffic counts, to reflect these higher volumes.

A similar comment can be made about the counts made at the Fenway T-Stop. The project proponents based their assessment of current use by spending one morning and one evening in June counting the number of people who use the station. Use of the station and of the rest of the line increases significantly during the fall when the many colleges and universities are in session and workers are back in full force, and as well during Red Sox games. We would like the proponent to take additional counts at the station to verify that their results are representative of other times during the year. ⑦

Both the traffic and public transportation counts are critical, as they form the basis for future year projections.

Trip Generation Assumptions

The proponents based their trip generation numbers on a variety of different sources. We do not have a question about these rates per se, but rather about the mix of uses in the building. It is projected that a significant portion of the development's office space will be for lab use; this has a lower trip generation rate than general office use. We are concerned that the mix of uses within the development will change and therefore that the amount of traffic generated is underestimated. In the final PIR/EIR, we would like the proponent to offer an analysis which shows the number of trips generated when a larger amount of office space is used in the development. ⑧

Mode Split Assumptions

The proponents assume that the mode split for Olmsted Plaza will be roughly 56% for cars and 44% for mass transit. Given the relatively easy access to the site by car, we feel that automobile usage has been underestimated. In addition, the ⑨ proponent assumes that 10-15% of the people travelling to the site will be van or car pooling. While we support all efforts to encourage employees to ride-share, we are skeptical about the ability to achieve such high rates of participation.

Other Planned or Approved Developments

Projected traffic levels from developments in the area other than Olmsted Plaza are under counted. The scale of the B.U. Armory development is not fully described, and the Massachusetts College of Art project can reasonably be expected to be completed by 1995. The impact of future development on the neighborhood's road system is therefore under represented.

Overall Traffic Generation

When taken together, it is likely that changes in traffic counts, trip generation rates, mode split assumptions, and the addition of other developments in the area, will show that the projected traffic generation numbers for Olmsted Plaza have been underestimated. We would like the proponent to prepare a sensitivity analysis that shows how much traffic volumes grow with new assumptions of more office space, a lower mode split, additional development, and whether the higher numbers projected for the project cause additional traffic problems.

Peterborough Street Parking

The 110 car parking lot at Jersey and Peterborough Streets is mistakenly included in the off-street parking inventory. This lot is intended to be converted to affordable housing as part of the overall community benefits package.

East Fens Intersection

A key intersection not studied in this report is Hemenway Street and Westland Avenue, which is a major through-point from the West to the East Fens. It can be expected that the Olmsted Plaza development will add traffic to this already over-burdened intersection.

Access and Egress From the Site

The DPIR/DEIR details access and egress to the site from Park Drive and Brookline Avenue, but it does not address how access and egress from Miner and Beacon Streets will be controlled. A proposal to develop access and egress along the Conrail right-of-way to Beacon Street via Maitland has apparently been abandoned. There is no question however, that access and egress from Beacon and Miner Streets will be used by employees, delivery personnel, and pedestrians, whether or not the connection from Miner to Fullerton Street is a public way. In that light, the report fails to address a significant traffic and noise impact on neighborhood residents, and fails to analyze the impact on streets and intersections affected by the resulting traffic patterns.

Pedestrian Issues

Pedestrian issues are a primary concern for residents. We feel the measures used in the report to evaluate pedestrian levels of service are inadequate. The key question is whether pedestrians are able to negotiate the crosswalks near the project. ⑮

We have timed the pedestrian signals at the Brookline and Boylston intersection. Pedestrians have roughly 15-20 seconds to cross each of these two streets. Given the large number of elderly and disabled people, as well as young families (parents with baby carriages have a particularly hard time crossing the intersection) living in the West Fens, we question whether this condition will promote access to the site. These signals should be adjusted to maximize safety for pedestrians, and therefore the entire impact area traffic volume analysis may be affected.

Traffic Mitigation

We applaud the attempts to provide traffic mitigation through as many non-structural means as possible (i.e. heavy use of mass transit, better timing of lights, creating more capacity in the system, etc.). However, several important questions remain.

First, the proposed mitigation plan requires many actions by the City and the State. Are they prepared to make such commitments? What happens to the effectiveness of the mitigation efforts if they do not agree to make the proposed changes? Is the developer prepared to pay for these improvements if the City and State cannot afford them? In the final PIR/EIR, we would like to see a draft Section 61 finding and draft City transportation agreement, which details the true amount of traffic generated by the project, the project's impact on the mass transit system, mitigation measures to alleviate these impacts, who will pay for the mitigation, and when the mitigation will occur. ⑯

Second, all of the improvements appear to be needed during the first phase of the project. What is the timetable for implementing the improvements? Will they be in place before all of the traffic impacts occur?

Third, while the mitigation plans are projected to improve the level of service at many intersections, many still remain at level of service "F." What do the developers propose to do about these intersections?

Fourth, how does the traffic mitigation plan work if the amount of traffic generated by the project increases?

Fifth, we would like to see a strong monitoring system put in place to evaluate the effectiveness of mitigation efforts. Traffic performance standards should be met before Phases II and III of the project can proceed.

SCALE

The overall scale of the proposed development continues to be a significant stumbling block for resident approval of the project. There are three primary concerns about the scale of the development:

1. Olmsted Plaza will not be located in a downtown commercial area, but in a residential neighborhood. The project's impacts on traffic and parking, and on residents' access to light and open views, will directly effect the quality of life for nearby residents.

2. The height of the proposed buildings is out of character with the abutting residential areas as well as nearby commercial structures. The issue is not the height of the new towers in relation to the existing Sears building, but of their relation to residences on the edge of the site. The Sears tower, while it is the tallest structure in the area, is set back from the property of residential abutters and therefore does not have an overshadowing impact on them.

3. The new towers, by virtue of their height, will visually deter from the architectural significance of the Sears tower.

To decrease the development's visual dominance of the area and to decrease its impact on residents' quality of life, the developer must consider either reducing the overall size of the development or reorganizing the square footage of the buildings on the site, particularly the tower on Park Drive. To accomplish the latter option, the size of the parking garage could be reduced and parking spaces made available for employees at Van Ness Street. We also propose that on-site underground parking be fully investigated as a development option.

CONSTRUCTION IMPACTS

Given the proximity of the site to existing residential neighborhoods, we would like to see a draft construction impact agreement included in the final PIR/EIR. In addition, KAFNI would like neighborhood review and comment before the final agreement is reached. We also request that a committee be formed that includes neighborhood residents, City representatives, and the development team. This committee would meet at least once per month to review compliance with the agreement as construction proceeds.

HAZARDOUS SUBSTANCES

The close proximity of a residential neighborhood to a proposed development that will lease space to companies and institutions involved in biomedical research has generated considerable concern among residents. While the DPIR/DEIR addresses the issue of biomedical waste from on-site research, recent history shows the inadequacy of local, state, and federal regulations to prevent the release of hazardous materials into the environment. It therefore remains unclear to us how exposure to toxic, radioactive, or bacterial substances will be prevented. All preventative measures must be fully address in the final PIR/EIR. ⑲

In addition to the controls on hazardous substances outlined in the report, the developer should ensure that regular inspections take place of handling, storage, disposal, and transportation systems. All documents, including copies of regulations, tenant permits, and inspection reports, must be easily available for public review.

CHILD CARE

We commend the inclusion of a day care center in the development. However, we feel that the center's size - 80 slots - will be inadequate to meet the demand of the estimated 5,000 employees. As well, to help meet the critical need for child care services in the neighborhood, the proposed center should be expanded to include an After-School Care program for working parents, and affordable slots should be set aside for neighborhood residents. ⑳

ENERGY CONSERVATION

It is discouraging to note that in nine pages devoted to the proposed development's energy usage, no mention is made of the need for conservation. A development the size of Olmsted Plaza will generate significant demand for energy resources; to ignore the social benefits of conservation is a serious oversight. The Olmsted Plaza developers should provide a detailed plan of their strategies for decreasing energy demand, how these strategies will be implemented, and who will be responsible for their implementation. ㉑

Further, the report states that both the Park Drive and Brookline Avenue buildings will be heated electrically. The developers should provide a justification for this choice, and a comparison of electricity to other fuels.

IMPLEMENTATION OF MITIGATION PLANS

Many of the mitigation plans suggested in the DPIR/DEIR are dependent either on the voluntary compliance of employees or contractors, or on actions and funding by City officials. This inevitably leads to the questions: Who is responsible for the implementation of these plans? What recourse do residents have if mitigation efforts fail?

The developers must reach agreement with the City and State on mitigation measures for traffic impacts, construction impacts, public benefits, etc. and formalize these agreements in a series of documents: a Section 61 finding on traffic and water/sewer issues from the State, a cooperation agreement, a DIP agreement, a transportation management agreement, a construction management program agreement, and the PDA agreement with the City.

To ensure that adequate responses to the concerns raised in this letter are included in those agreements, KAFNI requests that a draft of each agreement be incorporated into the final PIR/EIR.

In addition, KAFNI requests that the developers meet with the community before the final mitigation agreements are signed to allow for final community review and input into these documents.

Lastly, KAFNI requests that the project be broken into three phases and that the ability to construct each phase depends on the developer's compliance with mitigation plans. If the projects impacts have been mitigated, then the next phase should go forward. If mitigation has not been performed, or it has not proven successful, the development should not be allowed to move into the next phase.

We look forward to further discussions with the BRA on the Olmsted Plaza proposal, and to working with the City and the developers to arrive at a project that is mutually beneficial to the community's and the developer's interests.

Olmsted Plaza DPIR/DEIR

Sincerely,

John Blanchon

John Blanchon

James L. Buechl

Jim Buechl

Jon Klein

Mary Mercure

Mary Mercure

Richard Pendleton

Richard Pendleton

Kenneth J. Withers

Ken Withers

Dolores Boogdanian

Dolores Boogdanian

Rebecca Calahan

Rebecca Calahan

Gilbert Loo

Gilbert Loo

Jack Mills

Jack Mills

Nancy W. Weibust

Nancy Weibust

Steven Wolf

Steve Wolf

KAFNI 1

In its opening page the KAFNI letter states: "We applaud Olmsted Plaza Associates for their sensitivity to the proposed development's impact on the neighborhood. They have been accessible to residents, and they have made sincere efforts to address some of the residents' primary concerns." In responding to the KAFNI comments and concerns, particularly those offered under the heading of PUBLIC REVIEW OF THE DPIR/DEIR, the developer requests that KAFNI be equally sensitive to the unique characteristics of this project and its review process. For several reasons Olmsted Plaza Associates believe that the process has been thorough, and more than fair. First, the project site is outside the area to which Article 31 applies. The zoning code clearly states that "This article shall be applicable only in the Downtown/Northern Avenue Corridor area..." which has a western boundary at Massachusetts Avenue. Nonetheless the BRA requested, and the developer agreed, to undertake a voluntary Article 31 review. This decision was made based upon the perception that the project is a significant one to which the community, and KAFNI, as an active and interested neighborhood group, is very sensitive. By agreeing to undertake a voluntary Article 31 review, the City and the developer created a reasonable process for public participation; one that is well beyond any legal requirement that exists. This voluntary commitment was made despite significant schedule pressures and costs associated with the process. In making this commitment it was the developer's expectation that the City and the public would reciprocate with cooperative and expedited review efforts. Based upon the support voiced for the project by both KAFNI representatives and the representatives of the key City agencies at the BRA Board hearing concluded on November 30, 1989, it is now clear that the cooperative effort has been reciprocal. We trust that this means that KAFNI is now satisfied with the progress that has been made to resolve major issues subsequent to drafting this comment.

Second, the KAFNI letter expresses concern that the voluntary Article 31 submission is incomplete because it does not contain housing and employment reports. This observation is troublesome to Olmsted Plaza Associates from two standpoints. First, neither Article 31 nor MEPA has a requirement for housing and employment studies. Socioeconomic studies are specifically cited as being beyond the jurisdiction of MEPA, and Article 31 mandates studies for five development review components: a) Transportation, b) Environmental Protection, c) Urban Design, d) Historic Resources, and e) Infrastructure Systems. Members of KAFNI requested that housing and employment be considered, despite the lack of any regulatory basis for requiring such analysis. The developer, rather than resisting this request, agreed to undertake both studies. The commitment to undertake these studies is made in the DPIR/DEIR. The studies themselves were issued at the earliest possible date, in draft form, and are included in the FPIR/FEIR. It is unfair to claim that the submissions are less than adequate when the developer has gone to such lengths to satisfy community interests. It is our understanding that KAFNI no longer feels that this concern is a basis for delaying the project.

The KAFNI letter also objects to "...the short amount of time available to the public for comment." It states that at least 30 days should have been made available to evaluate the proposal. In fact the public had more than 30 days. In its community meeting of September 28, 1989, which was well attended, representatives of Olmsted Plaza Associates publicly announced that the joint DPIR/DEIR would be filed the following day. The BRA published its notice of availability in the Boston Herald on October 3, 1989, and MEPA noticed the availability of the DEIR in its Environmental Monitor of October 12, 1989. The City process was held open until November 3, 1989; the MEPA comment period was held open until November 13, 1989. This means that the document was available for comments for as many as 46 days. To the best of our knowledge no request for a copy of the DPIR/DEIR was refused during this period. Furthermore, the developer by no means terminated dialogue over issues of concern to the community. Community meetings, in which relevant issues were discussed openly, continued, statutory review period requirements notwithstanding. The willingness of Olmsted Plaza Associates to continue discussions with interested groups and individuals will not end with the completion of the formal environmental review process. We believe that this is the key to the absence of opposition to the project at the BRA hearings for PDA status on November 30, 1989.

Last, the KAFNI letter compares the Olmsted review process unfavorably to the review process for the Prudential project, largely because it included a 60 day review period. We hope that the recent support offered by KAFNI is a reflection that this perception no longer exists. In any event, however, there is little basis for any such comparison. The Prudential project is within the Article 31 study area, its review schedule was negotiated and the project proponent for Prudential has none of the time pressures faced by Olmsted Plaza Associates. Olmsted Plaza Associates feel very strongly that the public must realize that delays in the review process for its project have vastly different consequences than delays for other projects. Suggestions that more additional time be devoted to formal reviews than is required by existing regulation are akin to euphemisms for stating the position that the proposal should be killed. The project proponents now know of no one that takes such a view.

KAFNI 2

In deference to concerns raised by KAFNI and other organizations, Olmsted Plaza Associates has agreed to pursue the Housing Creation option which would provide financial assistance, via Linkage Funds, for the development of mixed income housing at both the Peterborough Street site and at the BU properties at Audubon Circle. This option will be developed and submitted for approval by the linkage trust within 90 days of the project having received its required approval from the BRA, Boston Zoning Commission, and Zoning Board of Appeals.

KAFNI 2A

Since this comment was offered, the City has come to agreement with B.U. regarding its divesting itself of housing in the Audubon Circle area. This was announced at the BRA hearings for the Olmsted Plaza PAD. We understand that the KAFNI endorsement for the project is based, at least in part, on the fact that it is satisfied with the progress being made on this issue.

KAFNI 3

The Peterborough site is a parcel with real value. The developers received an unsolicited offer for $1.5 million for the property. It has potential for several profitable uses. OPA has agreed to make the parcel available as an affordable housing site as part of its public benefits package. It has done so willingly in an effort to be a good neighbor to the Fenway community, and to participate in the City's efforts to create new supplies of affordable housing. Olmsted Plaza Associates, however, cannot agree with the suggestion that it receive no credit for the costs involved with making this commitment.

KAFNI 4

Olmsted Plaza Associates suggested the use of parking revenues to subsidize the purchase of affordable housing by local residents as an initiative that could be undertaken and administered simply and quickly. The proposal was by no means intended to suggest that there are not other means of helping provide housing subsidies to those who need them. Olmsted Plaza Associates is certainly available to discuss alternate means of applying the stream of revenue to housing needs in the Fenway. Such a dialogue could best be started by compiling a formal proposal for alternate use of the funds. The developer would discuss any such proposals with its authors, and with the appropriate City agencies.

KAFNI 5

The developer believes that the current employment proposals are responsive to the goals cited by the comment (see Sections 13, 14, and 17 of the Cooperation Agreement in Appendix VI). The Olmsted Plaza proposal includes establishing a job training center on-site. The establishment of the training center on-site obviously provides best possible access to existing residents of the Fenway. The availability of the center and the types of training provided will be widely advertised in the Fenway. The proponent believes that the training center will help prepare the unemployed and the underemployed both for job opportunities on the site, and for opportunities with other employers. It is certainly a goal of the developer to maximize local employment for all the reasons cited by KAFNI.

Olmsted Plaza Associates will encourage its tenants to hire locally. It will point out the benefits to both the employer and the development of having a local work force. The developers have publicly stated that they will seek to comply with the Boston Jobs and Boston for Boston programs. These are programs which OPA strongly supports. In addition, OPA will be seeking to develop job training programs geared to employing Fenway and Mission Hill residents. Specifically, OPA will be promoting the establishment of the Boston Health Careers Academy in the Fenway, which in addition to focusing on Boston high school graduates, will offer outreach and reference services to Fenway and Mission Hill residents. It will also offer pre-employment training for the unemployed and hard-to-employ in surrounding communities, particularly Mission Hill. In addition, the developers are seeking to establish a day-care training program for non-English speaking persons, perhaps using the day care center at Olmsted Plaza for on-the-job training or as a training laboratory. Finally, regarding jobs linkage funds, the developers are seeking to endow a scholarship program for Fenway/Mission Hill residents. These scholarships will enable area residents to obtain training in research-related occupations, such as research technicians, quality control managers and systems planners. These initiatives, and more, are currently being reviewed by the jobs linkage trust.

KAFNI 6

The KAFNI comment letter cites two primary concerns: a) "...the analysis significantly underestimates the amount of traffic that will be generated by the project" and b) ...the viability of the traffic mitigation plan is uncertain". The proponent feels that the first statement is incorrect, and the second statement reflects a misunderstanding of the process that is taking place.

The scope of the traffic study was the subject of long and thorough review. The proponent originally suggested a study area that it thought to be appropriate, together with a methodology for counting and projecting traffic. That proposed scope was presented to the BRA, BTD, and MEPA through the PNF/ENF. Knowing that traffic was a major concern with the Olmsted Plaza project MEPA, in its scoping decision, directed the proponent to have an additional topic-specific discussion with the various agencies with traffic expertise. The BRA, BTD, MDC, EOTC, and MASCO were invited to a session to review, in detail, the scope and methodology of traffic studies to be undertaken. At that meeting the study area was more than doubled in order to include each intersection for which each agency had some concern. At the same time the study methodology and the major assumptions to be used were reviewed. At the conclusion of the meeting there was consensus among the participants with technical backgrounds in transportation that an acceptable study had been designed. Most of the assumptions were derived from the BTD Transportation Access Plan Guidelines and from other recent studies. To state that the resultant studies underestimate traffic generated by the project is to disagree with the judgment of each agency with traffic expertise and jurisdiction in this matter.

The DPIR/DEIR did not profess to include a definitive traffic mitigation plan. Rather it was the intent of the traffic engineers to explore and outline the potential mitigation measures and present them for general review and consideration. That goal was accomplished. The various potential mitigation measures have been reviewed and discussed fairly continuously since the publication of the DPIR/DEIR. The status of consideration of the mitigation elements is reported in Section 3.4 of this report and in Appendix VI. It is our understanding that the mitigation program, as described by BTD in the November 30, 1989 BRA Board hearing, is acceptable to KAFNI.

KAFNI 7

This comment represents a misunderstanding of the time frame in which the traffic counts were undertaken. The misunderstanding springs from an erroneous statement in the DPIR/DEIR. At page 3-7 the report mistakenly states "Traffic volume data ... was obtained by a traffic count program conducted in June, July and August." This is not correct. The counts for the original 14 intersections were undertaken in the Spring when schools are normally in session. The original 14 intersections are those closest to the project site, and those for which the traffic engineers have the greatest concern. Supplementary traffic counts were taken in the summer months to provide data for the expanded study area. Likewise summer traffic counts were taken to characterize traffic for Red Sox events. The proponents are satisfied that this data base provides a reasonable basis for characterizing existing traffic. It confirms that existing traffic conditions are congested in many areas.

Appendix V includes a table outlining monthly MBTA ridership variation. A table comparing Olmsted Plaza traffic count data to a parallel set of traffic counts sponsored by MASCO in 1987 can be found in Table 3.3-1 of the DPIR/DEIR. A table with the dates for which each traffic count was taken can be found on page 3-4 of this report.

KAFNI 8

The proponent is not prepared to speculate on traffic generation associated with alternate development scenarios. The mix outlined in the DPIR/DEIR and refined in Section 2 of this report is the best current estimate of likely uses in the project. It is entirely possible to postulate use mixes with either higher or lower trip generation characteristics, but no useful purpose is served by doing so. It is the proponent's belief that the concern implied in this comment is adequately addressed by the BTD requirement to have a monitoring program to measure real versus predicted traffic annually.

KAFNI 9

The traffic consultants are confident that the mode split assumptions are reasonable. They were adopted after reviewing BTD guidance and several other recent reports. The mode split cited is no more aggressive than those commonly being used in the area. Furthermore, the annual traffic monitoring report required by BTD should provide reasonable feedback with respect to the validity of this assumption. Please note that BTD is requiring the proponent to seek an even more aggressive transit split. This is noted in the Transportation Access Plan Agreement.

Olmsted Plaza Associates is committed to the encouragement of the use of public transportation.

KAFNI 10

The list of projects included in "background" traffic is clearly listed in he DPIR/DEIR in Table 3.3-2. The list of projects to be included was provided by the City. The uses included were taken from the reports provided to HMM Associates. The background estimates assume that all 13 of these projects will proceed at the use levels outlined. Furthermore, the background numbers add 1/2% per year to network volumes from other sources. These assumptions were used despite observing decreases in traffic at several locations over the past two years, and despite the fact that employment projections, which drive background traffic, may need to be revised downward. In total, the traffic engineers are satisfied that background assumptions are quite conservative.

KAFNI 11

See response #8.

KAFNI 12

The parking lot at Peterborough Street is included in the "Existing Parking Supply Inventory". This is entirely accurate and appropriate. The parking lot will be converted to an affordable housing site in the future, however, so it is appropriate to assume that the 110 spaces will be removed from the local parking inventory in the future. A review of Table 3.13-4 indicates that this should not have a significant effect on the parking study results reported by HMM. Total off-street parking supply (exclusive of spaces being added by Olmsted Plaza) will decline to 956-110=846, versus peak demand, at 4 PM, of 709.

KAFNI 13

The Hemenway Street/Westland Avenue intersection is several blocks east of the site. It is well beyond the study area proposed by HMM. It is even beyond the 24 intersection study area adopted by consensus of the transportation agencies much later. Due to its distance, and due to the fact that very little Olmsted Plaza related traffic is projected to use this route, it will not be added to the study area at this time.

KAFNI 14

The FEIR/FPIR has been updated, and two major changes are:

- The Maitland Street Connector has been eliminated because its overall impact to reducing traffic impacts did not justify its cost. These monies will be allocated to improving the LOS at other locations that sorely need mitigation.

- The gate to/from the Harvard Community Health Plan from Fullerton Street will be closed (chained). The Olmsted site trips will not be permitted to use the Miner Street Bridge which is a private way.

KAFNI 15

Olmsted Plaza Associates and the City share these concerns for pedestrian safety. In designing mitigating measures, HMM will verify that all modified intersections, changes in signal timing, and new signals include pedestrian phases that include ample pedestrian cycle times. It is very likely that pedestrian safety can be significantly improved as the traffic improvements are implemented. See Section 3.6 of this report.

KAFNI 16

The proposed traffic mitigation plans are outlined in Section 3.4 of this report. The developer, BRA, BTD, MDC and MASCO are currently meeting on a regular basis to work toward agreements on the process for implementing the traffic improvements discussed. The developer's obligations for assisting in the implementation of these measures are documented in the Transportation Access Plan Agreement and in the Cooperation Agreement. These documents are included as Appendix VI of this report.

The project proponent agrees that there is some sense of urgency to implementing mitigating measures. As reported in the DPIR/DEIR half the 24 intersections in the DPIR/DEIR study area operate at levels of service E and F. Congestion will worsen in the next several years, regardless of Olmsted Plaza activity, unless traffic improvements are implemented. Therefore, the project represents an opportunity to both subsidize and initiate a meaningful traffic improvements program that is long overdue. As noted in this report the suggested improvements will not remove all the problems of the existing network, but it will prevent conditions from eroding and, in fact, will represent significant improvements over the existing situation.

Olmsted Plaza Associates is working with BRA, BTD, and MDC to establish mutually acceptable schedules for undertaking the improvements. A suggested schedule is included in Section 3.4 of this report. More definition will be given to the schedule. It is up to BTD to review and amend that schedule as it sees fit.

KAFNI also asks how the mitigation program will work if the amount of traffic generated by the project increases. The answer is fairly simple: levels of service will decrease with additional traffic, regardless of the source. If background traffic is higher, if other new projects arise, if business activity at other sites in the area increases, congestion will increase. The HMM studies, however, have made every reasonable attempt to identify and include likely sources of added traffic in the future. The monitoring plan suggested by KAFNI is a requirement of the City. It is the one logical way to verify that project-driven traffic projections are accurate.

While Olmsted Plaza Associates is opposed to formal traffic performance standards as prerequisites for subsequent construction, it should be noted that the Transportation Access Plan Agreement, together with the Cooperation Agreement, includes performance standards that trigger requirements to supplement additional mitigation efforts. It should also be recognized that traffic acts as a natural market-force valve for the project. Leasing space in buildings that are unreachable by virtue of a gridlocked street system would be a nearly impossible task. The proponent, as much as anyone, must have a workable traffic mitigation program to preserve the value of the development.

KAFNI 17

The proponent is well aware of the nature of the site. After dozens of meetings with the interested public, Olmsted Plaza Associates feels it has a command of the critical issues in the neighborhood. The design of the project, its mix of uses, the public benefits program, and the mitigation efforts reflect extraordinary efforts to enhance the quality of life for the neighbors of the project. The developer trusts that the continuing dialogue, the reductions in the scale of the project, up to and including the reductions specified at the PDA hearing of November 30, 1989, the numerous commitments to mitigate potential impacts, and the far reaching public benefits program have convinced KAFNI that the current list of positive impacts to the neighborhood outweigh any residual negative impacts to the quality of life that may be perceived by KAFNI constituents.

KAFNI 18

Olmsted Plaza Associates will make a copy of the draft Construction Management Plan available to KAFNI before it is finalized. BRA and BTD will consider any comments offered by KAFNI prior to implementing the plan, provided, of course they are offered, in writing, and in timely fashion. The Plan must be in place before a building permit can be issued.

The plan will identify the developer's representative for handling complaints on construction. This representative will be available, daily, to respond to any observed violations of the agreement. While the developer feels formal compliance review meetings could be scheduled on an as-needed basis, he would certainly make his representative available for monthly meetings with a committee of the type suggested by KAFNI if this is deemed desirable.

KAFNI 19

The developers have forwarded to KAFNI a memo from Hale & Dorr, legal counsel for the project, outlining the federal, state and local statutes which must be complied with regarding hazardous substances. A separate Solid and Hazardous Wastes Management Plan is currently being drafted that will outline the developers' commitments in this area. The preliminary plan is included in Section 2.2.

KAFNI 20

The developers are contemplating soliciting proposals from a number of area day care providers. Each will be asked to identify measures they will take to provide after school care for school age children. Slots will be set aside for both Fenway/Mission Hill resident workers in the building, and for lower income parents. The proposals will be reviewed with neighborhood groups before a final selection is made. In addition, OPA will ask providers to address ways in which the day care center could support the day care training program cited in the response to KAFNI 5.

Upon reviewing the space set aside for day care, OPA feels that the center can service at least 100 children, rather than the 80 reported in the DPIR/DEIR. Finally, in deference to a request made by KAFNI, OPA will ensure that the day care center will comply with pending City regulations. Also, see Section 17 of the Cooperation Agreement (Appendix VI).

KAFNI 21

To date the efforts of the Olmsted Plaza consulting team have focused upon the issues cited in the BRA and MEPA scopes. It has been necessary and prudent to do this in light of the time pressure facing the project. Neither scope cited the need to discuss conservation measures. Therefore, detailed conservation planning efforts have been deferred until after the first of the new year. The absence of such a discussion, however, should not be construed to reflect a lack of concern on the part of the developer. Olmsted Plaza Associates is committed to designing and implementing systems that include state of the art conservation techniques and equipment. To do so is economically wise, as well as socially aware.

KAFNI 22

See response #16.

In its last comment the KAFNI letter reiterates a request that the project be broken into three phases, with the intent that approvals be given in parallel phases. Olmsted Plaza sees and understands the rationale for such a request, but suggests a less drastic control mechanism for two reasons. First, a phased approval would put the entire project in jeopardy. The purchase price is not phased. It is fixed, and due upon closing. It is unlikely that Sears or any other informed seller would accept a sale under any other condition. The fixed price of the property is based upon the assumption that the total land cost can be amortized over the full build out of the project. Under any lesser build out the land cost per square foot of leasable area increases, and the project ceases to be economically viable. This being the case no competent lender will finance the development unless he has reasonable assurance that the project has the permits needed to support development at the levels necessary to support a viable undertaking.

A similar situation is true for the City. The City must have a fixed commitment for linkage and other public benefits programs. Since linkage and public benefits contributions are a function of the square footage of the development it is important for the City to have the project size fixed.

Second, it is important to note that the environmental review processes discourage developers from seeking approvals in piecemeal fashion. The State and City alike encourage applicants to describe the consequences of a fully developed project rather than seeking permits one small step at a time. The phasing suggested appears to be incompatible with this long-standing environmental review precept.

All these factors notwithstanding many attempts have been made to address the underlying KAFNI concern. These attempts are included in the Cooperation and Transportation Access Plan Agreements that are included as Appendix VI. The agreement includes several measures to monitor the success of the mitigating measures, and to take corrective actions where the objectives of the mitigation plan are not met. It is the proponent's understanding that KAFNI feels that the progress made on this issue is responsive to their concerns. Also see responses to Audubon Circle 8, Children's Hospital 5, and MDC 1.

MASCO

MEDICAL AREA SERVICE CORPORATION

MEPA

November 3, 1989

Ms. Connie Getek
EOEA/MEPA Unit
100 Cambridge Street
Boston, MA 02202

RE: Olmsted Plaza Draft Environmental Impact Report (DEIR - EOEA #7643) and Draft Project Impact Report (DPIR)

Dear Ms. Getek:

We welcome the opportunity to submit joint comments to both the BRA and EOEA on this important development project for the Boston economy. The redevelopment of the former Sears distribution facility in the Fenway area, on the edge of the Longwood Medical Area (LMA), is a positive step towards the revitalization of the Brookline Avenue/Boylston Street commercial corridor, potentially bringing much needed jobs to the communities of the Fenway, Audubon Circle, and Mission Hill.

We support the developers' plans to deed to the City of Boston the important "missing link" of Frederick Law Olmsted's historic Emerald Necklace. As open space activists in this area, and as a member of the Emerald Necklace Advisory Board established by the City of Boston to guide the planning and implementation of park improvements, we look forward to working with Olmsted Plaza Associates in the further refinement of landscape plans for this parcel, in keeping with the extensive work that has gone into the Emerald Necklace Master Plan over the last several years.

The project will also make an important contribution to housing in the Fenway area, through the contribution of the parcel on Peterborough Street to the Fenway Community Development Corporation (FCDC) for the development of affordable housing.

Given the project's location relative to and its projected traffic impacts on the LMA, we are committed to working with the developers and their consulting engineers, HMM Associates, to develop additional analysis and mitigation measures to address traffic congestion at key intersections, particularly in the LMA, as well as promoting an area-wide commuter mobility program. The work to date is a good start but needs to further consider

333 Longwood Avenue, Boston, Massachusetts 02115 617 732-2310 FAX: 617 732-2759

MEMBER INSTITUTIONS • Beth Israel Hospital Boston • Brigham and Women's Hospital • The Children's Hospital • Dana-Farber Cancer Institute • Emmanuel College • Harvard University Medical School • Harvard University School of Dental Medicine • Harvard University School of Public Healt Joslin Diabetes Center • Massachusetts College of Pharmacy and Allied Health Sciences • New England Deaconess Hospital • Simmons College • Temple Israel • Wheelock College • Winsor School

additional ways to improve traffic in the LMA, including key recommendations from the Longwood Medical Area Transportation Study completed in 1988. We trust that, with additional analysis, the developers will offer specific commitments to transportation mitigation measures which are adequate, have a realistic chance of being built, and for which commitment letter from the appropriate state and local agencies have been secured. Our comments of a more technical nature are attached.

Sincerely,

Richard M. Shea Jr.

Richard M. Shea, Jr.
Vice President
Area Planning and Development

Encl.

cc: Jim Keefe, Trinity Financial
Patrick Lee, Olmsted Plaza Associates

TECHNICAL COMMENTS

MASCO's review of the DPIR/DEIR revealed a number of issues that need further study (and several inconsistences), which are listed below:

INTERSECTION LEVEL OF SERVICE (LOS) ANALYSIS

o Turning Movement Counts (TMCs)

Olmsted Plaza DPIR/DEIR traffic counts taken in 1989 in many circumstances are considerably lower than the counts taken for the LMA Transportation Study in 1987. TMCs conducted by MASCO at the site before the closure of the Sears facility would not indicate the reduction of traffic to the level stated in the DPIR/DEIR, which indicated a growth rate of -2.11%/year (see Table 3.3-1). For more information see LMA Transportation Study, MASCO/VHB, 1987-88 and Sears Building Reuse Study, SOM, 1987. ②

Where DPIR/DEIR counts are lower than LMA Transportation Study counts, LMA counts should be used.

o Storage Availability

Storage availability, or lack of, should be taken into account during LOS analyses of the following intersections: Sears Rotary, Longwood/Riverway intersection, and the Brookline/The Riverway intersection. ③

We suggest that the analyzed results should be adjusted to reflect the Chapel Street's proximity to Longwood/Riverway intersection and the Francis Street's proximity to Brookline/Riverway intersection.

o Signal Phasing

The report's intersection analyses disregarded certain aspects of the signal phases of the following intersections: ④

1) Brookline/Longwood intersection

o Brookline SB approach has a Left-turn arrow.

2) Longwood/The Riverway intersection

o Riverway NB approach has a Left-turn arrow.

3) Brookline/The Riverway intersection

o Exclusive pedestrian phase was added in 1988.

These discrepancies should be reviewed, explained, or re-analyzed.

o Lane Movements ⑤

A number of the lane movements shown in the Appendices (Volume Traffic, Appendix F-6 1989 Existing) are incorrect, including:

1) Longwood/The Riverway intersection

o Riverway NB approaches should be from left; Left-turn only, Through, and Through and Right-turn.
o No separate Right-turn lane on Longwood WB.
o Riverway SB Left turns are illegal.

2) Brookline/Longwood intersection

o Longwood WB Left lane should be analyzed as an exclusive Le turn.
o On-street parking should be shown on the drawings as it exists.

3) Huntington/Ruggles/Louis Prang intersection

o Huntington NB Right lane should be analyzed as Right-turn only.

o Parking on Huntington northbound north of intersection shou be shown.

4) Brookline/The Riverway intersection

o Brookline NB Left lane should be an exclusive Left-turn lan

o Brookline Avenue SB Left lane should be exclusive Left-turn lane, Right lane is a Right and Through lane.

o The Riverway NB Right lane is an exclusive Right-turn lane.

5) The Fenway/Avenue Louis Pasteur intersection

o Incorrect movements are used to analyze this intersection.

These intersections should be re-analyzed with the correct lane movements.

MITIGATION MEASURES

o Brookline/Longwood and Brookline/The Riverway ⑥

Additional on-street parking spaces need to be removed in order to accommodate left-turn bays. The LMA Transportation Study recommends the removal of all metered parking on Brookline Avenue between The Fenway and the Town of Brookline. For more information see LMA Transportation Study, MASCO/VHB, 1987-88, and Brookline Avenue meter removal concepts prepared by Vanasse Hangen Brustlin.

o Sears Rotary

The major problem with the Sears Rotary, as indicated in the LMA Transportation Study, is insufficient storage. The two recommended improvements (Pure Rotary and T-intersection) do not address this issue. A signalization of the Riverway/Park Drive merge should be evaluated with the closure of the westbound Park Drive loop at The Fenway/Brookline intersection.

o One-way Couplet

Many of the resulting volumes for the US One-way Couplet are incorrect. Also, according to the LMA Transportation Study, considerable LOS improvements to the Sears Rotary, Longwood/The Riverway, Brookline/Longwood, and Brookline/The Riverway intersections result from a one-way couplet (between the rotary and the Brookline/The Riverway intersection). Therefore, the southern portion of this recommendation should not be dismissed.

o Modifications to the Longwood Avenue/Riverway Intersection

It is not clear whether the study supports the modifications at Longwood/The Riverway recommended by the LMA Transportation Study and follow-up analyses which show that LOS "C" or "D" can be achieved by closing Longwood Avenue's south side crosswalk and allowing northbound (NB) left-turning vehicles during the pedestrian phase, but not during the NB through-traffic phase.

PUBLIC TRANSPORTATION

- Impact on MBTA Route 47

The average load factor during the AM peak hour of service from Ruggles Station to the LMA, according to the 1987 Boarding and Alighting Analysis conducted by MASCO, was 1.16. The PM peak hour average load factor for service from the LMA to Ruggles Station was 1.05. With the additional ridership generated by t project and other area development, the average load factor during the AM and PM peak hour between Ruggles and the project will far exceed the State DPU's maximum of 25% standees. The resulting poor service will not be viewed as a viable commute alternative. Improvements have to be made to the Route 47 service in order to accommodate the projected future demand.

- Fenway Station Improvements

In order for the project to achieve the transit mode split indicated in the Report, improvements have to be made to the Fenway Station. Because the improvements will not be completed until the second phase of the project, more vehicle trips than projected will be generated between the completion of phase one and phase two.

We suggest that temporary improvements be made to enhance the quality of walking to and from the station and increase the transit mode split for phase one.

MASCO 1

The current state of the efforts to plan for and implement mitigation measures for traffic is reflected in Section 3.4 of this report. Olmsted Plaza is pleased to include MASCO and its traffic consultants in the team of professionals working toward solutions to the long-standing traffic problems in the area.

MASCO 2

The latest AM PM peak hour traffic counts collected in 1989, as compared to the VHB counts collected in 1987 indicate:

		AM	PM
1.	Park/Brookline/Boylston	5.5% Drop	4.8% Drop
2.	Brookline at Fenway	1.5% Drop	2.8% Drop
3.	Longwood at Riverway	13.0% Drop	2.8% Drop
4.	Brookline at Longwood	2.5% Drop	6.9% Drop
5.	Fenway at L. Pasteur	16.0% Rise	15.4% Rise
6.	Huntington at Ruggles	5.8% Drop	5.0% Drop
7.	Brookline at Riverway	19.0% Drop	16.6% Drop
8.	Riverway Fenway Merge	1.0% Rise	8.2% Rise

Locations 5 and 8 show traffic increases. Locations 1, 2, 4, and 6 show slight drops in volume which are normal fluctuations for peak hour traffic counts taken on different days of the week. Locations 3 and 7 show substantial drops in traffic which is due to each intersection operating at or beyond capacity (i.e., LOS F). since all of the locations that showed a drop in traffic operated at LOS E or LOS F, we felt it was not necessary to factor up counts that show obvious problems. The -2.11%/year rate was presented in the DEIR/DPIR, but the +0.5%/year growth rate was the rate used for the no-build traffic growth (page 3-17), along with new traffic from 12 other nearby developments (page 3-20).

MASCO 3

The availability of left turn bay storage is being taken into account at all locations that require mitigation. We have computed the storage length for left turning vehicles based upon a 95% probability of random arrivals (Poisson Distribution). Several locations, rotary intersections and Longwood Avenue at Chapel Street, experience queue backups through adjacent intersections. The required CINCH software is not capable of modeling such events. However, we have rerun all rotary and Longwood Avenue CINCH runs so that these adjacent intersections operate on a common signal cycle. We are in the process of using Passer 2 to analyze the time-space diagrams for the rotary and Brookline Avenue intersections. This is a work task beyond the Scope of the FPIR/FEIR that is being done in response to BTD and MDC requests for additional information. This work, along with queuing plans will be available for review in January.

MASCO 4

Signal Phasing

The directional movement of the Brookline/Riverway, Longwood/Riverway, Brookline/Longwood intersections are not consistent with the directions of MASCO. In general, our eastbound and westbound movements are MASCO's northbound and southbound movements, respectively. The pedestrian phase for Brookline/Riverway location is now included in the FPIR/FEIR traffic analysis.

MASCO 5

Lane Movements

The lane movements appearing in the geometric graphics of the DPIR/DEIR appendices (Volume II Traffic, Appendix F-6 1989 Existing) do not agree with the analysis lane movements and have no effect on the CINCH runs, which are correct. The CINCH runs contain the following correct land movements:

1. Longwood/The Riverway intersection:

   - Riverway NB approaches are from left; left-turn only, through, and through and right-turn.

   - No separate right-turn lane on Longwood WB.

   - Riverway SB left turns are illegal.

2. Brookline/Longwood intersection:

   - Longwood WB left lane is analyzed as an exclusive left-turn.

3. Huntington/Ruggles/Louis Prang intersection:

   - Huntington NB right lane is analyzed as right-turn only.

4. Brookline/The Riverway intersection:

   - Brookline NB left lane is an exclusive left-turn lane.

   - Brookline Avenue SB left lane is an exclusive left-turn lane, right lane is a right and through lane.

   - The Riverway NB right lane is an exclusive right-turn lane.

5. The Fenway/Avenue Louis Pasteur intersection:

   - This intersection analysis has been changed with new lane movements and correct geometrics.

MASCO 6

A considerable amount of work has been undertaken on traffic mitigation measures. This work is reflected in Section 3.4 of this report. The authors believe that each of these concerns is addressed in the mitigation plan as currently described, with the exception of the Longwood/Riverway modification suggested by the LMA Study. It is the understanding of Olmsted Plaza Associates that neither MDC nor BTD is presently willing to endorse this measure. The proponent, however, is more than willing to continue the dialogue on this issue.

MASCO 7

The Route 47 bus line study for the Olmsted Plaza project, which was conducted at the bus stops at Audubon Circle in August 1989, was to evaluate the quality of service provided by Route 47 to the site location area, including the service frequency and load factor at these bus stops. The bus line demand and capacity analysis was not a study objective. It is clear that the demand-capacity analysis should be at the highest demand location on the line. In this case, it is between Ruggles Station and the LMA.

Although, according to MASCO transportation management staff, the Route 47 demand by LMA students and employees is high, it does not warrant MASCO providing shuttle bus service. Such service is economically unfeasible.

With the projected demand from Olmsted Plaza, it is recommended that the developer and MASCO determine the feasibility of jointly providing a shuttle bus service between Ruggles Station and the site and the LMA area. Providing the service will directly relieve the Route 47 demand on this segment.

MASCO 8

Fenway Park Station is critical to the success of Olmsted Plaza. It is imperative to the success of the project that access to an upgraded station be maximized during all phases of development. Olmsted Plaza Associates will continue to work with the MBTA to ensure that this vital link to the site be upgraded and kept active, thus assuring the attainment of the aggressive mode split goals. Please refer to the responses to the MBTA letter. Note that no Phase I analysis was undertaken. The analysis addresses the peak operational traffic associated with a completed project.

Boston
Raymond L. Flynn, Mayor

RECEIVED
NOV 13 1989
MEPA

Nov. 13, 1989

Secretary John P. DeVillars
Executive Office of Environmental Affairs
100 Cambridge St.
Boston, MA 02202

ATTN: MEPA Unit

RE: Olmsted Plaza Draft Environmental Impact Report

Dear Secretary DeVillars:

I am in receipt of the DEIR for the Olmsted Plaza redevelopment project at 309 Park Drive, and would like to submit the following comments.

I understand that this project is on an accelerated course through the State and City approval process, and that the developers will be submitting a Final EIR very shortly. We have communicated our comments on the DEIR to the developers already, and expect that they will be responded to in the Final. The purpose of this letter is to inform MEPA of the general scope of our review, and of the issues which we feel must be resolved before final project approvals are given.

The Olmsted Plaza project represents over 1.5 million square feet of office, research and development, retail and hotel space, in an area which is very sensitive to additional traffic on local roadways. The DEIR demonstrates that many intersections in the area are currently operating at or above congested levels of service. In order for the project to be successful, there will need to be careful coordination and cooperation between the developer and the various public agencies responsible for transportation in the area.

Existing Conditions

Many of the traffic counts establishing baseline conditions in the area were taken in the summer months. It is the impression of community residents, expressed at public meetings to review this project, that traffic volumes are considerably higher when college is in session. Also, MASCO has noted that the volumes counted by

Richard A. Dimino, Commissioner, Transportation Department
City of Boston/City Hall Square/Boston, MA 02201

the project proponents are lower at many locations than those found by MASCO's consultants two years ago during a traffic study in the Medical Area. Therefore, the proponents have been asked to re-examine the volumes they have used in light of these comments, and apply appropriate seasonal adjustment factors where necessary to find volumes more reflective of annual peak conditions.

Likewise, passenger counts on the Green Line at the Fenway stop should be adjusted to reflect the higher use of transit services during the school year.

Project Impacts

The trip generation, modal split and trip distribution factors used in the analysis are generally acceptable, with the exception of the assumption that only 25% of retail and hotel employees will drive to work. This assumption should be revised upward.

I understand that in the FEIR, a new alternative will be examined wherein the on-site garage is reduced in size, and a second garage added, for phase 2, on a developer-owned site on Van Ness Street. The traffic impacts of this alternative should be fully examined, especially the impacts of the second garage.

The DEIR indicates that there are no substantial project impacts or potential congestion at the Boylston/Park intersection (#8). However, experience suggests that a problem may exist at the nearby intersection of Boylston and Ipswich. The proponent should analyze this intersection.

Mitigation Measures

A series of measures have been proposed in the DEIR to mitigate the impacts of the project and to improve traffic circulation generally in the area. We are working with the proponent, and where appropriate, the MDC, to evaluate and refine these proposals

- Sears Circle. The viability under the Build Condition of the circulation alternatives proposed for the Circle, as well as for the existing circulation pattern, depend to large extent on the ability of the signals in the Circle to be sequenced in a manner that permits a smooth traffic progression without the buildup of queues from one signal to another. This question needs detailed analysis.

- Riverway/Longwood Ave. The proposed alteration of pedestrian crosswalks, and installation of barriers t enforce their use, is not practical. A more promising approach is the synchronization of this signal with the one at Longwood/Chapel St. The MDC should pursue this idea with the town of Brookline.

- Riverway/Longwood. The proposal to widen the Riverway at this point is not practical. The City of Boston has proposed to the MDC the idea of peak-hour left turn prohibitions on both Riverway and the eastbound Brookline approaches. The MDC is evaluating this idea.

- Maitland Street connector. This measure, as analyzed, does not provide the benefits, particularly in Sears Circle, that would justify it, and we understand that it will be dropped in the FEIR. It is important, however, that the bridge between Miner Street and Fullerton not be used as an informal substitute for the Maitland Street connector. A plan for the future of the bridge should be developed.

- Fenway Station. The developer's plans to integrate the Fenway Station with the new Park Drive office building are welcome. We look forward to developing a plan for this improvement with the developer. We are interested to see that the improvements are made as early in the development schedule as possible. Since the Park Drive office building is part of phase 2, it may be necessary to institute some temporary improvements during phase 1, in order to serve area users and workers at the Sears building.

- Pedestrian Conditions. Community meetings indicate that this is among the most important issues surrounding this project. The DEIR's analysis included counting of pedestrians only at crosswalks. The FEIR should contain an improved discussion of pedestrian issues. All pedestrians around the site should be counted, including those who do not cross at crosswalks. Special care must be taken to provide for pedestrian safety in this area. In particular, the crossing of Brookline and Boylston along Park Drive must be made safe through the provision of adequate pedestrian green time.

Thank you for the opportunity to comment on this DEIR. We will continue to work with the developer, the community, and other public agencies in the review of this project. We look forward to reviewing the FEIR.

Sincerely,

Andrew McClurg
Senior Transportation Planner

6542T

BTD 1

HMM collected traffic counts from April to November 1989, at 26 locations. At 16 locations the counts were taken during the college semester. All traffic flows were adjusted so that the midblock volumes between locations balanced. This was done at locations that did not have several cross-streets or garage driveways that would affect the midblock volumes.

The latest AM/PM peak hour traffic counts collected in 1989, as compared to the VHB counts collected in 1987, indicate:

		AM	PM
1.	Park/Brookline/Boylston	5.5% Drop	4.8% Drop
2.	Brookline at Fenway	1.5% Drop	2.8% Drop
3.	Longwood at Riverway	13.0% Drop	2.8% Drop
4.	Brookline at Longwood	2.5% Drop	6.9% Drop
5.	Fenway at L. Pasteur	16.0% Rise	15.4% Rise
6.	Huntington at Ruggles	5.8% Drop	5.0% Drop
7.	Brookline at Riverway	19.0% Drop	16.6% Drop
8.	Riverway Fenway Merge	1.0% Rise	8.2% Rise

Locations 5 and 8 show traffic increases.

Locations 1, 2, 4 and 6 show slight drops in volume which are normal fluctuations for peak hour traffic counts taken on different days of the week.

Locations 3 and 7 show substantial drops in traffic, which is due to each intersection operating at or beyond capacity (i.e., LOS F). Since all of the locations that showed a drop in traffic operated at LOS E or LOS F, we felt it was not necessary to factor up existing counts that show obvious problems. The -2.11%/year rate was presented in the DEIR/DPIR, but the +0.5%/yr growth rate was the rate used for the No Build traffic growth (page 3-17), along with new traffic from 12 other nearby developments (page 3-20).

Finally, according to MEPA traffic guidelines (B.2.) "the volume data that are factored to base year levels should be no more than 2 years old on the submittal date of the DEIR".

BTD 2

The transit analysis included in Section 3.5 of this report includes some analysis of variation in transit usage by day of the week. Appendix V to the report includes some general MBTA statistics on seasonal variations in transit usage. The proponent agrees that transit usage is lower in summer months, but the relative contributions of the project, as reported in the DPIR/DEIR, do not change with fluctuations in the baseline usage levels.

BTD 3

For the Brookline Avenue office option (Option A), if we were to double the auto mode split for retail employees to 50%, the AM inbound vehicle trips would increase by four VPH, and the PM outbound vehicle trips would increase by seven VPH. For the Brookline Avenue hotel option (Option B, now defunct), if the auto mode split for hotel and retail employees were to double to 50%, the AM inbound vehicle trips would increase by 10 VPH, and the PM outbound vehicle trips would increase by nine VPH. Since this increase is almost negligible, we can safely assume that there will be no change in computed LOS values. Also, the DPIR/DEIR takes no reduction for internal trip satisfaction, trip interception, or trip diversions for hotel/retail passby trips.

BTD 4

The split parking concept is fully described in Section 2.1 of this report. The impacts, both positive and negative of the split parking concept, are analyzed in Section 3.4.

BTD 5

At the request of BTD this intersection has been added to the list of intersections included in the traffic analysis. Another intersection was added in response to an MDC request. In total, the study area now includes 26 intersections. See Section 3.4.

BTD 6

Section 3.4 includes a complete description of the mitigation program suggested by HMM. The developer has committed to continue working with BTD, MDC and others on refining mitigation efforts. The developer's commitment to mitigation is contained in Appendix VI of this report.

Stern Realty Systems, Inc., Agent
100 Centre Street Brookline, MA 02146
731-5905

iverway Square Condominium Trust

September 28, 1989

Mr. Stephen Coyle
Director
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Dear Mr. Coyle

On Tuesday, September 26 over 20 members of our condominium association met with representatives of the development team, Olmsted Plaza Associates, to review their proposed plans for the redevelopment of the Sears properties. The Riverway Court Condominium is a 100 unit residence primarily owner-occupied located directly across the street from the main Sears property.

Based upon our review of the plans and a subsequent question and answer period, we would like to express our support for this project. In part, we are pleased with the massing and scale of the project, as it has been downsized from previous proposals. We are impressed with their design concept for the site and buildings, particularly with respect to pedestrian circulation and the neighborhood-based retail component on the first floor. However, we are most excited by the developer's commitment to reconvey the Park Drive parking lot back to the City, which is virtually in front of our property, and take a strong and credible leadership role in its reconstruction as a park.

While we continue to have concerns about traffic and parking we are confident that the developers will continue to work with City officials and neighborhood leaders in developing an effective traffic mitigation plan. Also, we are pleased that the developer has expressed interest in making overnight parking available for residents at a reduced rate. In no way do we want this development to worsen parking problems in the neighborhood and ideally we hope it could alleviate this most pressing problem.

In short, we are very pleased with the plans for this project, and hope that the BRA can make this project a reality.

Sincerely,

Jean Belanger

Jean Belanger
Chairman of the Trustees

Riverway Square Condominium Trust

Olmsted Plaza Associates thank you for your support of our project.

Wheelock College

[illegible]

October 26, 1989

James G. Keefe, President
Trinity Financial
The Old South Building
294 Washington Street
Boston, MA 02108

Dear Mr. Keefe:

Bob Walsh and I appreciated your taking the time to meet with us at Wheelock College to explain the proposed redevelopment of the Sears property near Kenmore Square. We have also appreciated the care and attention which has been devoted to soliciting opinions from all the constituent groups in our neighborhood, and I want to commend you for reaching out in constructive ways to involve us.

We support the proposed project and believe it will make a positive contribution to both the economic basis and the quality of life in this neighborhood. We remain concerned about the overall traffic and parking problems in the area, which we cannot blame on your project, and hope very much that you will continue to work for overall long-term improvements in the traffic flow and availability of parking. Certainly your project seems to have done more than its fair share to avoid having an adverse impact on present traffic conditions. Perhaps with your additional help, we will be able to see an actual improvement in traffic conditions in the next decade.

Our interest in improving the traffic situation, however, does not detract from our support for your project. To the contrary, we hope very much it receives the necessary approvals so that construction can begin promptly. We look forward to its completion, and to welcoming it as a full member of our neighborhood.

Very truly yours,

Daniel S. Cheever, Jr.
President

Wheelock College

Olmsted Plaza Associates thank you for your support of our project.

Boston
Raymond L. Flynn, Mayor

October 24, 1989

Mr. Stephen Coyle, Director
c/o Shirley Muirhead
Boston Redevelopment Authority
Boston City Hall, Room 913
Boston, MA. 02201

Dear Mr. Coyle:

As a member of the Emerald Necklace Advisory Board, I write to inform you of recent activity in the Sears development project which will return the Sears parking lot to the Parks Department reuniting it to the Emerald Necklace park system. In addition, it is my hope that the Emerald Necklace Advisory Board will play an important role in determining the long term goals for this site as well as, short term, a design for the renewed park.

In the next few months the Boston Redevelopment Authority's designated developer for the site will convey the parking lot site to this department. The site will be operated as a parking lot for two years, and the profit from this operation will go into a fund for the reconstruction of the site. In the meantime, the developer has committed funds for the park's design.

Public review of the project has called for an advisory committee to guide the design process. I propose that a subcommittee be formed from the Emerald Necklace Advisory Board. A number of interested community residents will be asked to join this subcommittee.

It is incumbent upon us to act quickly at this point in the development process so that we can ensure a quality vision and rebuilding of this park. We will be polling the committee shortly to seek your approval of this plan and ask for your ideas. If you agree, the subcommittee will be formed in the coming weeks and begin the design review process.

Lawrence A. Dwyer/Commissioner/Parks and Recreation Department/1010 Mass Ave /Boston MA 02

Thank you for your past help. As we move from the master planning process to implementation I anticipate a number of exciting challenges such as this to emerge. Our timely action will safeguard the vision of the master plan as it accommodates the realities and common sense of city building and neighborhood initiatives.

Sincerely,

Lawrence Dwyer

Lawrence A. Dwyer
Commissioner

LAD/cc

cc: Stephen Coyle
Jim Keefe
Mark Primack
Justine Liff

Boston Parks and Recreation

No reply necessary.

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Management

225 Friend Street
Boston
Massachusetts 02114
617-727-3160
FAX 727-2630

Division of Planning & Development

RECEIVED
NOV 14 1989
MEPA

November 13, 1989

Ms. Connie Getek
MEPA
Executive Office of
Environmental Affairs
100 Cambridge Street
Boston, MA 02202

RE: Olmsted Plaza DPIR/DEIR

Dear Ms. Getek:

The Department of Environmental Management's Olmsted Historic Landscape Preservation Program respectfully submits the following comments in regard to the DPIR/DEIR for Olmsted Plaza:

Architectural Issues:

The development team should be commended for their response to the public concern over the originally proposed heights of the Park Drive Building and Brookline Avenue Building. The down-scaled height for the Park Drive Building has the full support of the Olmsted Program, as it ascends no higher than the existing cornice line of the Sears Building. However, the Olmsted Program is still hesitant in its support of the newly down-scaled Brookline Avenue Building. At thirteen stories, it still may intrude on the visual airspace of the Sears Building when viewed from the front. If the development team can show that the Brookline Avenue Building is sufficiently set back as to drop it below the Sears Building cornice line when viewed from the far side of the Park Site, the Olmsted Program will gladly lend its support to the entire architectural program for Olmsted Plaza. ①

Traffic Issues:

The development team should again be credited for their willingness to expand their originally proposed traffic study area in response to public concern over potential traffic impacts connected with the redevelopment proposal.

The Olmsted Program agrees with the report's assessment of the four alternative traffic flow scenarios, and recommends that mitigation of traffic impacts be initiated in conjunction with the redevelopment schedule proposed by the development team, and that no major roadway alterations to the existing configuration be implemented. ②

Traffic Issues: cont.

The Olmsted Program is concerned that the proposed intersection improvement shown on page 3-70, in Figure 3.7-1 may have a negative impact on the historic Longwood Bridge that spans the Muddy River. Careful study of this proposal from an engineering standpoint should be conducted.

Landscape Issues:

As stated in the Olmsted Program's letter of 7/20/89 to BRA Project Administrator, Don Klabin, "the Olmsted Program feels that no expensive, or irreversible construction be performed at the (Park) site until all options for procuring sufficient funds for an accurate restoration of the site have been exhausted." We understand the many uncertainties surrounding the logistics and costs associated with the eventual restoration of the open-watercourse scheme proposed for the "missing link" by the Emerald Necklace Master Plan. The Program, therefore, looks forward to working with the newly proposed Design Review Committee to generate an appropriate, low-cost, interim park design that will respect Olmsted's design intent for the Emerald Necklace park system.

In addition, the Olmsted Program would again suggest that the proposed use of the development team's funds dedicated to the park restoration be changed to the following:

* A portion of the $100,000. that Olmsted Plaza Associates has committed for Planning and Engineering be targeted toward a study that generates a scope of work and estimated costs for restoring the open watercourse to the park site, and the connection of the Muddy River and Fens as a continuous watercourse.

* That Olmsted Plaza Associates commit the $400,000. that they have shown as "capital contribution to park restoration" and "25 year maintenance commitment" to create a City of Boston administered Trust Fund for restoration improvements to the Emerald Necklace, including the park site. Such a fund created up-front would begin generating additional funds for the park system, and if stipulated that the fund could only be accessed as matching funds, could act as a catalyst for many of the restoration projects recommended by the Emerald Necklace Master Plan.

* Olmsted Plaza Associates should consider earmarking a percentage of their parking garage fees to the Emerald Necklace Trust Fund, suggested above, for restoration and maintenance of the Park Site.

Thank you for the opportunity to submit thse comments. We look forward to participating further in your review process as the project moves forward.

Sincerely,

Mark E. Watson

Mark E. Watson
Project Manager
Olmsted Historic Landscape
Preservation Program

DEM 1

The proposed 13-story Brookline Avenue building will not be visible above the main parapet of the Sears Building when viewed from the far side of the Olmsted Park. The sight line is shown on the accompanying diagram.

DEM 2

Refinements to the earlier traffic studies are included as Section 3.4 of the report. A Transportation Access Plan Agreement is included as Appendix VI. As suggested by DEM, the circulation system recommended is an improved version of the existing street system rather than a significantly modified circulation system.

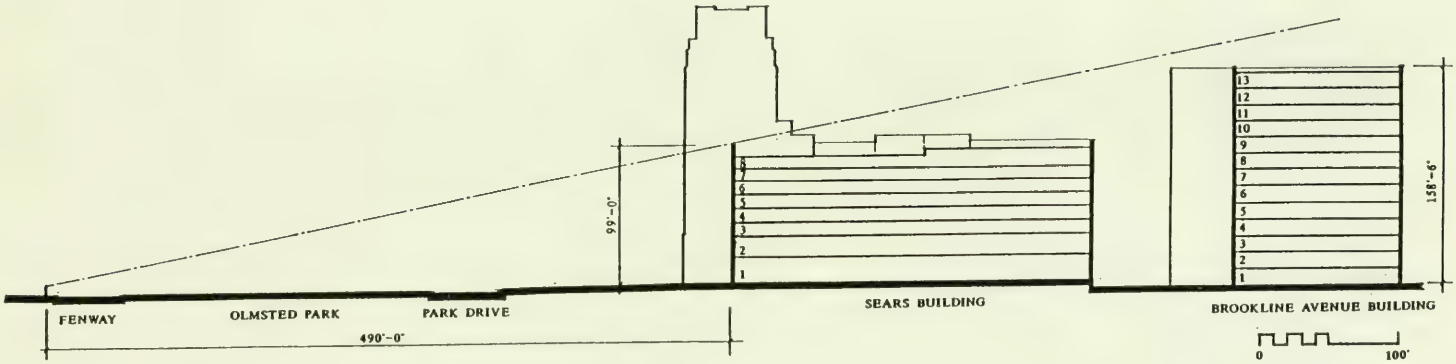
DEM 3

The proposed triangular crosswalk and signal timing has reduced the vehicle delay at the Longwood Avenue-Riverway intersection. This allows for better flow of vehicles over the Longwood Bridge and decreases the vehicle queue from 30 to 18 vehicles. Therefore, the intersection improvement plan will enhance the quality of flow over the bridge by improving intersection operations. No roadway/curbline shifts are required, therefore, no physical impacts to the bridge will result. A hardwire interconnect conduit from the Riverway signal to the Chapel Street signal is proposed.

DEM 4

We believe that the interim park scheme should not preclude a long-term vision of the site, shared by DEM and other interested parties. The design review committee, which we helped create, has the dual mission of designing a park to reflect today's economic constraints as well as laying the important groundwork to restore Olmsted's original plan. We welcome DEM's involvement in this process.

With respect to allocating a portion of the $100,000 to study watercourse issues, we view this as being an issue to be decided by the Design Committee. The Committee should determine the priorities of how the money should be spent, and we will support its decisions.


99'-0"
158'-6"
FENWAY
OLMSTED PARK
PARK DRIVE
SEARS BUILDING
BROOKLINE AVENUE BUILDING
490'-0"

With respect to the $400,000 in capital funds earmarked for the site, the proponent has agreed since filing the DPIR/DEIR to guarantee the full $1.1 million in capital and design costs and has agreed to maintain the site for 50 years, as opposed to 25 years as originally committed. This is in addition to arranging that the land be donated.

To be sure, however, these monies for both improvements and maintenance will be limited to just the "missing link" site. It is hoped that the proponent's unique financial support of this site will encourage similar types of financial commitments for other parcels of the Olmsted Park system.

Finally, with respect to dedicating a portion of the parking lot receipts to support other improvements to the Emerald Necklace system, the proponent makes the following two comments: first, the garage is not a profit center, as its projected revenues will never result in an acceptable economic return; secondly, while the proponent appreciates DEM's interest in advocating additional financial assistance, we feel that the contribution we are making is already substantial and must rank among the largest private contributions ever made in the Commonwealth in support of parks and open spaces.

DEM 5

Please see the response to the Fenway Garden Society letter. Note that details on current funding for the park are included in the Cooperation Agreement between the City and the developer. The agreement is included in Appendix VI. Participation in the advisory committee seems to be the most rational way to press for any revisions to the funding program.

The Commonwealth of Massachusetts
Executive Office of Transportation & Construction
Office of the Secretary
10 Park Plaza, Room 3510
Boston, MA 02116-3969
Telephone 973-7000
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Michael S. Dukakis
Governor
Frederick P. Salvucci
Secretary
and
MBTA Chairman

RECEIVED
NOV 20 1989
MEPA

(X) DRAFT E.I R. ( ) FINAL E.I.R. NO. 7643

DATE: 10/12/89 DATE RECEIVED: 10/12/89 COMMENTS DUE: 11/13/89

TOWN/CITY: Boston, MA

PROJECT PROPONENT: Olmsted Plaza Associates
Four Copley Plaza
Suite # 600
Boston, MA

PROJECT DESCRIPTION: The proposed project is the redevelopment of the existing and presently vacant Sears Catalogue and Surplus Sales Facility in the Fenway district of Boston. The project will call for two 250,000 - 300,000 square foot buildings and the renovation of the former Sears building. The total project will consist of 1.68 million square feet of gross floor area consisting of retail, office, and R&D space.

(✓) COMMENTS (SEE ATTACHED) ( ) NO COMMENTS

DATE: [illegible]

FREDERICK P. SALVUCCI
SECRETARY

The Commonwealth of Massachusetts
Executive Office of Transportation & Construction
Office of the Secretary
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Michael S. Dukakis
Governor
Frederick P. Salvucci
Secretary
and
M.B.T.A. Chairman

EOTC DEIR Comments on Olmsted Plaza
Boston, MA
EOEA # 7643

The Executive Office of Transporation and Construction has reviewed the DEIR for the Olmsted Plaza development. This project consists of approximately 1.5 million square feet of mixed use space. Phase I of the project entails renovating the former Sears Building and constructing five levels of the parking garage. Phase II of the project entails constructing two additional buildings and the remaining three levels of the parking garage. The parking garage will contain a total of 1,525 spaces. Development uses include office, a conference center, research & development, retail, a day care, and a hotel. The project site is located adjacent to the MBTA Green Line at Fenway Station. Due to incomplete analysis relating to MBTA impacts, EOTC requests that a SDEIR be required.

The Olmsted Plaza project is an extremely large development project consisting of over one million square feet of development. The project is ideally located near the MBTA transportation system. Therefore, the proponent should take full advantage of encouraging the use of this station to reduce the number of trips that would otherwise be generated to the site. Accordingly, the EIR needs to discuss further three major issues: 1) The proponent should state what traffic impacts will exist at key intersections as a result of the project and state how these impacts can be mitigated to expedite public transit and ambulances, as well as general traffic, 2) The proponent should state what further improvements are required on the Green Line to support the proposed increase in ridership from building employees, visitors, and tenants and document how these improvements will be financed, and 3) The proponent should justify the need for 1,525 parking spaces, when in fact the site is conveniently served by rapid transit and bus. 1,525 parking spaces seem to be counter productive to the goals described in the DEIR. ① ② ③

The proponent completes a level of service analysis for the 24 intersections within the study. As a result of the Olmsted Plaza development, many of these intersections are impacted, but commitments have not been made to improve any of the intersections. The proponent states that "it does not appear that traffic impacts need to be an inhibiting factor in the development of Olmsted Plaza, provided agreements on the ④ financial responsibility and timing for mitigating measures can be negotiated". These agreements on financial responsisbility and timing for mitigation should be made and stated prior to MEPA certification. Documentation should be made in this regard in the SDEIR.

Four recommended schemes were described in the DEIR addressing roadway and intersection improvements. These four schemes are referred to as the Pure Sears Rotary, Riverway-Park "T" intersection, U.S. Couplet, and U.K. Couplet. The Maitland Street Connector was also recommeded. Some of these schemes suggest major changes to the roadways and traffic direction. If any of these schemes should go forward, the proponent must document MBTA bus routes that currently use the impacted roadways and complete a detailed analysis on bus schedule and operation impacts.

Several intersections that would be operating at poor conditions at project completion was analyzed for mitigation. The individual intersection improvements appear to address traffic impacts. The proponent should discuss negative impacts that may result from these individual intersection improvements. A comprehensive look at these improvements should be completed.

The Maitland Street Connector which connects Maitland Street with Fullerton Street is outlined in the DEIR. According to the DEIR, this mitigation alone does not seem to improve traffic conditions in the area. For comparison, the proponent should complete a level of service analysis with the proposed intersection improvements without the Maitland Street Connector.

The proponent completes an accident analysis in the DEIR. The analysis shows that the accident rate is high at several of the intersections analyzed within the scoping area. The proponent should discuss if the proposed mitigation improvements will assist in reducing the number of accidents outlined, and if not, what other improvements might be necessary to reduce the accident rate.

The background growth rate is documented to be 0.5%/year. This number seems low. The proponent should document what projects were accounted for in this growth rate and include a map which shows the developments. All developments currently proposed should be included in the growth rate.

⑩ 1,525 parking spaces are proposed for this project. As the proponent may be aware, the parking freeze regulation for the City of Boston Air Pollution Control Commission underwent some regulatory changes over the past few years. This parking freeze subjects all development adding new "for-fee" parking spaces within the downtown Boston core area to seek approval from the Air Pollution Control Commission in an effort to reduce vehicle trips to this portion of Boston. Several residents and state officials have expressed an interest to expand the existing freeze boundaries. The Olmsted Plaza project is not subject to the current parking freeze regulations. However, the proponent should consult with the City of Boston Air Pollution Control Commision prior to the next EIR MEPA filing to insure that the current parking freeze boundary will not be expanded in the near future to include the Olmsted Plaza site.

⑪ The FEIR should discuss whether there will be designated spaces for each development mix, what building clients or individuals will be charged for parking, and what the parking zoning requirements are for the site. The proponent makes reference to a proposed rate structure to discourage all day parking in the DEIR. The proponent should discuss in more detail how this proposed rate structure will discourage employees to use the garage.

⑫ In regards to other issues, the proponent uses a mode split of 44% for transit and walk-ins and 56% for auto. Although it may be a desirable goal, 56% for auto seems low for this area. Further, it is unclear why a transit analysis is completed using this data, which is taken from zones in the Longwood Medical Area. Justification must be made as to why zones in the Longwood Medical Area are used as opposed to zones in the site vicinity or the zone that includes Kenmore Square. The proponent should use data from zones which are served by the same transportation modes as the development site or data from locations within the same zone. ⑬ The proponent should also justify why an even lower auto mode split is used for "other" designations in the DEIR.

The DEIR makes reference to several transportation routes that operate in the vicinity of the site. These transportation routes include the rapid transit lines, commuter lines, MBTA bus service and MASCO bus service. (13A) There are several points of clarification that should be made in the DEIR which are thoroughly outlined in the MBTA comments for the Olmsted Plaza project. A copy of the MBTA comments are attached for reference.

The proponents discussion on rapid transit and bus capacity is incomplete. First the analysis was completed in August. The transit and bus routes analyzed in the report are heavily used by students. To account for this discrepancy, this analysis should be completed at a time that takes peak ridership into account. Second, the proponent must analyze maximum load points to determine overall impacts on the transit and bus lines. A more complete analysis relating to the MBTA rapid transit and bus system must be included in the SDEIR.

During Phase II construction, the proponent states that Fenway Station will be impacted. To insure safety to pedestrians using the station, the proponent states that a covered pedestrian walkway and security fencing should be built. The proponent should consult with the MBTA in this regard to determine necessary saftey requirments for the Fenway Station. MBTA requirements should be outlined in the SDEIR.

No mitgation commitments were outlined in the DEIR to account for potential impacts on the MBTA transportation systems. However, several recommendations were made for station and operational improvements. The proponent seems to imply that the MBTA, together with state and federal funding, may undertake the recommended improvements. The MBTA has upgraded and is continuing to upgrade many of its stations and is also improving exisiting operational facilities. The proponent is advised that there are no current plans for upgrading the Fenway Station at this time.

In the DEIR, the proponent states that the Fenway Station is currently under-utilized. The proponent further states that this is in part due to the fact that it is dark, isolated, and relatively inaccessible particulary for the mobility impaired. The proponent should come up with a mitigation plan to upgrade the Fenway Station to a level that would attract employees and building visitors and clients. This plan should include interior and exterior station improverments, a proposed ramp or elevator with direct connections to the station for mobility impaired, and pedestrian access to the outbound track from the development site. A plan should be included which shows proposed pedestrian connections from the Fenway Station to points within and throughout the site. A schematic plan should also be included which shows a proposed access for mobility impaired.

The proponent recommends the use of a turnback facility on MBTA and Conrail land adjacent to the site. This improvement would provide more operational flexibility for the Green Line. This improvement would also allow for additional queuing for major events at Fenway Park. A mitigation proposal should be described to account for this improvement. ⑱

The proponent should outline and describe all proposed improvements that will be completed as part of the Olmsted Plaza project. Mitigation commitments and time schedules for completion should be outlined in the EIR. Such measures may better justify the projected mode split outlined in the DEIR report. ⑲

Transportation Management Strategies described in the report include establishing a permanent position to coordinate public transit use for commuters, maintaining service schedules, implementing an on-site MBTA transit monthly pass program, coordinate carpool and vanpool programs by utilizing ride share information, work with other public and private agencies and citizens to expand transit service and the ride share program, work with tenants to implement staggered work hours, work with MASCO to increase its serviceability, and work with building tenants to subsidize the cost of MBTA passes, vanpools, carpools, and shuttle bus services.

To better encourage tenants to subsidize these programs, the proponent may wish to commit to assisting with potential subsidies or matching subsidies of the tenants. The proponent should elaborate on methods to encourage tenant subsidies. The proponent should also identify potential stops that may better serve building employees and clients. In regards to potential expansion of bus service with MASCO and transit, dates of when these programs will be in place should be documented in the FEIR. ⑳

11/17/89. Rev
lgs

EOTC 1

The traffic mitigation designs are described in Section 3.4 of this report. See also Appendix VI.

EOTC 2

The project-related demands for public transportation services are discussed in Section 3.11.7 of the DPIR/DEIR. Means for MBTA to improve the service it provides on the Green Line are suggested on page 3-117 of the DPIR/DEIR. See the response to MBTA comments for the status of discussions regarding the developer's contribution to transit improvements. Additional specific commitments to subsidize public transportation are included in the Transportation Access Plan Agreement in Appendix VI.

It should be noted that the improvements suggested in the DPIR/DEIR are needed with or without the Olmsted Plaza project. The project provides additional revenue sources that should expedite implementation of needed remedies.

EOTC 3

The need for parking spaces is justified by the parking study included as Section 3.13 of the DPIR/DEIR. An update of that analysis is included as Section 3.7 of this FPIR/FEIR. Provision of a lesser number of parking spaces may force a greater public transit mode split, but it will do so with two significant negative side effects: a smaller parking supply would serve to increase competition for existing parking in an area in which the competition is already severe. Project neighbors have expressed concern that the project should not further aggravate the existing shortage. In addition, a significant reduction in parking supply would negatively affect the commercial marketability of the site. The proponent is not prepared to put himself at a competitive disadvantage to attract tenants and customers.

EOTC 4

Specific means for mitigating traffic impacts are described in Section 3.4 of the FPIR/FEIR. The project proponent has pledged $500,000 toward immediate implementation of these mitigation measures as described in the Cooperation Agreement with BRA. Up to $300,000 more in funding is available for Phase II improvements, as described in the Transportation Access Plan Agreement included as Appendix VI. The funding will be made available in a time frame that permits completion of all improvements prior to the occupancy of any Phase II building.

EOTC 5

The improvements proposed to the preferred improvement scenario (Scenario #2), do not result in any significant changes to the roadway network which would impact MBTA bus routes.

EOTC 6

The impacts that the traffic improvement plans have are analyzed in the FPIR/FEIR in Section 3. Air quality impacts, as a result of the traffic improvements, have been discussed. Pedestrian conflicts that occur have been remedied with the necessary pedestrian phases and are addressed in the report. The new parking patterns which will cause rerouting of vehicles to off-street parking has also been addressed in the FPIR/FEIR.

EOTC 7

See pages 3-37 through 3-46 of the DPIR/DEIR. A summary comparison of the two cases is presented in Tables 3.5-1 and 3.5-2.

EOTC 8

Based upon a study taken from Transportation Engineering, February 1978, the following accident reduction rates occur when specific improvements are made at intersections; shoulder widening and improvement will reduce accidents by 29% over a yearly period; installation of striping and/or delineators will reduce accidents by 13%; installation or upgrading of traffic signals will reduce accidents by 23%; signals and striping combined reduced accidents by 24%;

channelization, including left-turn bays, reduced accidents by 23%; pavement widening reduced accidents by 25%; additional lanes without new median reduced accidents by 17%; all of the intersections improved involved using one or more of these methods which indicates that the accident rates should be reduced upon completion.

EOTC 9

See pages 3-17 through 3-25 of the DPIR/DEIR for a detailed discussion of the treatment of "background" traffic. Note that approved projects' traffic was added to the background. The list suggested is included as Table 3.3-2.

EOTC 10

A discussion regarding future parking freeze boundaries with Denise Breiteneiher, Air Pollution Control Commission, revealed that expansion of a parking freeze would not include the Olmsted Plaza site within the next two years.

EOTC 11

Although the Olmsted Plaza project is a mixed land use development, its parking system is treated with respect to the overall demand of the different uses. It is not necessary to specify tenant's parking demand, but it is important to specify the total long-term and short-term demand of the project, and designate adequate spaces to accommodate this demand. In compliance with the City of Boston parking freeze and to discourage tenant employee auto use, a specific fee structure for the short-term spaces within the project parking facilities has been established and discussed in the FPIR/FEIR. See Section 3.7. The short-term space fee structure is exclusively focused on discouraging long-term parking in short-term spaces.

EOTC 12

Zones in the Longwood Medical Area (LMA) were used for mode split data as it was felt that the similarity of the land uses in the LMA to those of the proposed project would more accurately represent the expected mode splits. The close proximity of the site to the Green Line and MBTA bus routes means that the site is served by essentially the same transportation modes as the LMA.

LATE COMMENT

RECEIVED
NOV 2[illegible] 1989
MEPA

LATE COMMENT

November 27, 1989

John P. DeVillars
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

ATTN: Connie Getek, MEPA Unit

RE: Olmsted Plaza, Boston, MA EOEA No. 7643

Dear Secretary DeVillars:

Massachusetts Historical Commission staff has reviewed the Draft Environmental Impact Report regarding the proposed project referenced above. The project involves the redevelopment and rehabilitation of the 1928 Sears, Roebuck and Company Mail Order Store, which is included in the Inventory of Historic and Archaeological Assets of the Commonwealth and which appears to be eligible for listing on the State and National Registers of Historic Places. In addition, the proposed project site is adjacent to the Olmsted Park System which is a National Historic Landmark and a National Register Historic District. After review of the DEIR, MHC staff have the following comments.

The reduction of the mass and scale of the proposed new construction at the site, and the deletion of the earlier proposed roof top addition to the Sears Building, are improvements to the project and address previous concerns of MHC staff.

However, the DEIR does not adequately document the historical and architectural significance of the property. MHC staff previously requested the opportunity to review a draft of the National Register nomination for the Sears Building in order to fully evaluate what effects the proposed demolitions, alterations, and rehabilitation may havee on significant architectural features. The MHC is still awaiting of submission of this draft document. Enclosed is a copy of a letter of August 8, 1989 outlining our concerns and comments. ①

The DEIR states that the rear warehouse additions proposed for demolition were constructed in stages between 1949 to 1966, suggesting that they do not contribute to the Sears Building's eligibility for listing on the National Register of Historic Places. Previous information submitted to this office

Massachusetts Historical Commission, Valerie A. Talmage, *Executive Director, State Historic Preservation Officer*
80 Boylston Street, Boston, Massachusetts 02116   (617) 727-8470

Office of the Secretary of State, Michael J. Connolly, *Secretary*

dated one of the additions to c. 1929. The DEIR also states that the groundfloor storefronts proposed for "reopening" were original to the building and were bricked up in the 1950s. This conflicts with earlier information that the storefronts were an unexecuted aspect of the original design. Again, the MHC requests a draft National Register nomination to fully evaluate these proposed changes. These discrepancies need to be clarified in the Final Environmental Impact Report.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800) and M.G.L. Ch. 9, ss. 26-27c, as amended by Ch. 254 of the Acts of 1988 (950 CMR 71.00) and MEPA.

If you have any questions, please contact me.

Sincerely,

Allen Johnson

Allen Johnson
Preservation Planner
Massachusetts Historical Commission

AJ/ls
cc: Boston Preservation Alliance
Boston Landmarks Commission
John Zajac, DEP/DWPC
Robert Johnson, MDPW
Patrick Lee, JMB/Urban Development Company
Samuel M. Gifford, HMM Associates
Mark E. Watson, Olmsted Historic Landscape Preservation Program/DEM
Christopher Greene, Office of Cultural and Historic Landscape/DEM
Ellen Lipsey, Parks and Recreation Department, City of Boston

enclosure

August 8, 1989

Jim Alexander
Notter, Finegold, & Alexander, Inc.
77 North Washington Street
Boston, MA 02114-2193

RE: Olmsted Plaza and proposed rehabilitation of the former Sears Building, Park Drive and Brookline Avenue, Boston, MA; EOEA No. 7643.

Dear Mr. Alexander:

Thank you for the opportunity to meet with you and Jim Monteverde of your staff to review plans for the proposed rehabilitation and redevelopment of the former Sears Building and site. The property is included in the Inventory of Historical and Archaeological Assets of the Commonwealth and appears to be eligible for listing in the State and National Registers of Historic Places. In addition, the Sears Building is adjacent to the Olmsted Park System which is a National Historic Landmark and a National Register Historic District.

Massachusetts Historical Commission staff understand that the project proponent intends to apply for a tax credit for the substantial rehabilitation of the property. As we discussed in our meeting, several aspects of the proposed rehabiliation will need further clarification to determine if the work will meet the Secretary of the Interior's "Standards for Rehabiliation". I have enumerated those issues below.

MHC staff request the opportunity to review an updated site plan and drawings for the project as soon as they are available. In addition, it is of primary importance the MHC staff receive the draft National Register nomination for the property in order to fully evaluate what effects the proposed work may have on significant architectural features.

Storefronts - The proposal to create new storefronts on the Park Drive facade based on an earlier, unexecuted, design with details taken from as-built storefronts on the Brookline Street facade does not comply with the Secretary of Interior's "Standards for Rehabilitation" and should be reconsidered. The Standards discourage alterations that have no historical basis or which remove historic material, but allow for contemperary treatments which clearly read as new construction.

Massachusetts Historical Commission, Valerie A. Talmage, *Executive Director, State Historic Preservation Officer*
80 Boylston Street, Boston, Massachusetts 02116 (617) 727-8470

Office of the Secretary of State, Michael J. Connolly, *Secretary*

Windows - You indicated that reports have noted that the existing multipaned steel sash are in repairable condition and do not require wholesale replacement. Removing, rather than repairing these units would violate Standard #6 of the Secretary's Standards which encourages repair, rather than replacement, of deteriorated architectural features. The windows are an important character-defining feature of the Sears Building and MHC staff recommend the project proponent retain and repair the existing sash and investigate using interior storm windows to address energy conservation concerns.

Alterations to the rear elevation - Additional information is needed on the proposed rear stairtower and the proposed multistory projecting bays, designed to "open up" the rear elevation. Designs for this new construction should minimize the loss of historic material and be compatible with the size, scale, color, material, and character of the property.

Demolition - Additional information is needed on the rear additions and accessory structures to justify their proposed removal. The demolition may be justified if the anticipated National Register documentation clearly documents that they are less than 50 years old and are non-contributing structures.

New Construction - Preliminary architectural drawings indicate that the proposed new office, hotel, and garage structures will be compatible with the historic Sears Building in design, scale, massing, and materials. MHC staff request the opportunity to review more detailed plans, elevations, and renderings for the new construction as they are available.

Interior - Additional information is needed on what interior features and spaces are significant in order to evaluate the proposal to create additional square footage by filling in floors between the ground floor and the mezzanine. Significant features should be documented in the National Register nomination.

Landscaping - Remnants of the property's original landscaping plan, which was intended to complement and extend the adjacent Olmstead-designed Muddy River Parkland, survive at the front, corner, and side of the Sears Building. The project proponent is urged to reconstruct this historic landscape as much as possible as part of the site plan. In addition, the project proponent is strongly urged to coordinate the disposition and restoration of the "missing link" Emerald Necklace Park parcel in front of the property with the Department of Environmental Management in accordance with the Emerald Necklace Parks Master Plan, and with the Massachusetts Historical Commission.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36CFR 800) and M.G.L. Ch. 9, ss. 26-27c, as amended by Ch. 254 of the Acts of 1988 (950 CMR 71.00) and MEPA.

If you have any questions, please feel free to contact me.

Sincerely,

Allen Johnson

Allen Johnson
Preservation Planner
Technical Services Division
Massachusetts Historical Commission

cc: Boston Preservation Alliance
Boston Landmarks Commission
✓Mark E. Watson, Olmsted Historic Landscape Preservation Program/DEM
✓Christopher Greene, Office of Cultural and Historic Landscape/DEM
✓Ellen Lipsey, Parks and Recreation Department, City of Boston
AJ/as

MHC 1 & 2

Leslie Larson, team consultant preparing the National Register nomination, delivered copies of Parts I and II to the Massachusetts Historical Commission on 11/26/89. These documents address the commission's concern about adequate documentation of the architectural significance of the property and clarify references to the grade level storefronts. Additionally, we believe the previous reference to a 1929 addition was a typographical error. The first addition after the phased completion of the main building was in 1949.

CG

City of Boston
The Environment
Department

ston City Hall/Room 805
ston, Massachusetts 02201
17/725-4416 or 725-3850

November 15, 1989

RECEIVED
NOV 17 1989
MEPA

LATE COMMENT

Mr. John DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street, 20th Fl.
Boston, MA. 02202

ATTN: MEPA Unit, Connie Getek, EOEA #7643, Environmental Impact Report for the Olmstead Plaza.

Dear Secretary DeVillars:

The City of Boston Environment Department has reviewed the Environmental Impact Report for the Olmstead Plaza Project and would like to submit our comments:

1. In our previous comments on the ENF, the Department requested that restoration of the "missing link" Olmstead Park site be discussed fully, including funding. It was our understanding that this restoration was to be done using private sector dollars. It does not appear that any serious evaluation of this restoration was done for the EIR. We would like to see a thorough analysis of this in the Final EIR. ①

2. Since the ENF was filed, the Boston Landmarks Commission has accepted the Sears Building as a Landmark and its ancillary property as a protection area, at a public hearing on October 14, 1989. The nomination has been sent to Mayor Flynn for his action, it will then be sent to the City Council for final approval.

3. Although the proponent has stated that the culverts running from the Muddy River under the project site are adequate to handle the 100 year storm flow, we feel an examination of these pipes is warranted. They may not have been maintained properly and may not be suitable to handle the 100 year storm flow. ②

4. A study conducted by the consulting firm of Metcalf and Eddy under the auspices of the Massachusetts Executive Office of Environmental Affairs examined ways to improve the water quality in the Muddy River. One recommendation dealt with whether or not the flow should be increased and diverted in the vicinity of the Project. This study should be reviewed by the project proponent to see if the recommendations can be incorporated into the project. ③

I look forward to reviewing the Final Environmental Impact Report and I appreciate the opportunity to comment.

Sincerely,

LM Downey

L. M. Downey, Director

LMD/DKB

Boston Environment Department 1

Please see pages 6-21 through 6-27 of the DPIR/DEIR. Also see pages 10-6 through 10-9 of the DPIR/DEIR. Also see pages 2-6 and 2-8 of this FPIR/FEIR. Also see the response to the Fenway Garden Club comment letter.

Olmsted Plaza Associates have clearly spent a considerable amount of time studying issues associated with the restoration of the "missing link". Likewise they have provided a significant level of private funding to ensure that the valuable resource will be returned to park status.

Boston Environment Department 2

Despite the fact that the FEMA FIRM Flood Profile Maps for the Muddy River show that the culvert can accommodate the 100-year storm event, this was not assumed to be the case. The 100-year flood level was established at 10.5' NGVD by FEMA and the Boston Conservation Commission. The developed parcel will increase the amount of flood storage on the site regardless of the state of the Muddy River conduit. Several studies of the culverts have been performed in the past several years that indicate that the culverts are indeed partially blocked by sediment build-up. This is an area that may require further study when final plans for the missing link park parcel are completed.

Boston Environment Department 3

See the response to comment 1, above. Also, planning for the park is now a function of the Advisory Committee.

191 Hamilton Street
Cambridge, Mass. 02139
November 13, 1989

Janet McCabe
Director, Environmental Review
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Mass. 02202

RECEIVED
NOV 14 1989
MEPA

Subject : Comments on the Draft Environmental Impact Report for "Olmsted Plaza" Boston EOEA # 7643

Dear Ms. McCabe,

The Draft EIR has notable format problems, most critical being printing on only one side, which makes the main volume very bulky and difficult to hold and read. Copy machines are readily available which make two-sided copies. The only excuse for bulky one-sided printing for EIRs is laziness or the intentional production of intimidating reports.

More critical is the lack of inclusion of the MEPA and BRA scopes in the main volume of the report. They appear to have been included in the technical appendix of the DEIR, which was not part of the regular circulation.

The MEPA/EOTC Guidelines for EIR preparations also specify that V/C ratios and queue lengths be included. Unfortunately, this DEIR lists only LOS and average delays, and presents no information on V/C ratios in the text. The Final EIR should present V/C ratios, as well as queue length information. ①

==================== TRAFFIC ANALYSIS =======================

The EIR presents information on 24 intersections, and generally identifies existing levels of service with reasonable accuracy. Some of the existing average delays appear excessive, but this may be a quirk of the computer models.

My primary concerns with traffic analysis begin on page 3-68. The list of mitigation proposals is almost entirely narrative, and does not include intersection diagrams. Only one of the 19 intersections proposed for mitigation is accompanied by a diagram showing the proposed changes. This presentation makes it difficult to understand the environmental impacts of the mitigation proposals, most notably at the Riverway and Brookline Avenue, where there are proposals to add approach lanes to the Riverway on both approaches. I am sure that both of these changes will require removal of trees and other changes to the surrounding parkland. Sadly, this EIR treats all roadways as if they were mere civil engineering entities. ②

In truth, the Riverway is like Park Drive in that it is a parkway, a park road which is built on park land. As such, any park road is a park element and legally not a public way. One does not deal with the Riverway as if it were Route 1 or Route 9. Have highway engineers learned nothing in the past 20 years?

Generally, the proposals for intersection modifications are difficult to evaluate lacking a diagram, but more importantly they appear to take advantage of quirks in the 1985 Highway Capacity Manual in order to show improvements which may not be attainable in the real world. Some of these changes include :

* Taking of parkland for roadway purposes
* Ignoring the effects of short lanes (see the attached technical paper on the analysis and calculation methods to assess short lanes)
* Ignoring the effects of capturing through vehicles in painted left-turn-only lanes
* Undermining or ignoring pedestrian service
* Setting signal timing to minimize delay, and assuming benefits for signal actuation and interconnection. (The 1985 Capacity Manual includes notorious quirks which permit "credits" for reduced delay resulting from interconnection and/or actuation of signals. These credits are completely unjustified when intersections become congested. The best recourse is to rely exclusively on V/C ratios, not delay at congested locations).
* Loss of on-street parking, esp. in residential areas
* Assumptions of no conflicts from illegally parked vehicles or other stopped vehicles.

Individual examples are :

#1. Park Drive at Beacon : Through vehicles will get caught in the painted left turn lane; right turn lanes will be short and likely to be underutilized. The parking bans will be of limited effectiveness due to their temporal nature and degree of enforcement. Consider the lack of effectiveness of similar peak hour parking bans in the Back Bat area.

#14. B.U. Bridge at Commonwealth. : Pedestrian conflicts, short lanes, and poor lane utilization are all present here. What assumptions were made relative to pedestrian flows and to traffic increase on the bridge due to development in Cambridge?

#15. University Road at Commonwealth : This intersection is not signalized. Exiting vehicles from Storrow Drive must turn right onto Commonwealth at an unsignalized intersection. They must pick their gaps in both the traffic stream and the flow of predominantly B.U students on the crosswalk.

In sum, the FEIR should include intersection diagrams of all locations proposed for mitigation, and should include an analysis of the effects of short lanes, mixed lanes and pedestrians explicitly. I am very worried that a computer con game may be played here in the EIR, taking advantage of loopholes and flaws in the Capacity Manual. The primary obligation of an EIR is accuracy and representation of real-world conditions, not adherence to inaccurate and erratic traffic documentation.

========================= TRAFFIC AND PARKING ================

The proposal for a 1500-car parking garage implies that (assuming half of these vehicles will be released in the peak hour) there will be a flow of 750 peak hour vehicles from the site. This figure is quite close to the trip generation figures assumed in the DEIR (711-732 exiting vehicles).

Consideration should be given to a half-size garage with special incentives and controls for ride-sharing, similar to the John Hancock parking garage in the BACK Bay. ①

========================== TRANSIT ==========================

In contrast to the suspicious traffic mitigation proposed, I found the transit analysis to be a stunning delight. This is the first time I have ever seen an EIR which shows data on scheduled service vs. actual service, as well as data on the variations in headways. With counts of ridership and calculations of load factors, we are now in the position to evaluate the level of service on the Green Line with something other than our qualitative observations that service is somehow "messed up."

Tables 3.11-1 and 3.11-2 make for a fascinating comparison. The first table should have been more clearly labeled as the Scheduled service while the second table shows what is actually delivered. Instead of 6-8 minute scheduled service, the trains are actually running 3-4 minutes apart, or twice the frequency that the MBTA claims in their schedules. Why are the schedules so fouled up? Do they want to discourage riders? Not be accused of promised too much? Or is it the result of flawed performance evaluation measures which penalize actual service which is worse than scheduled service. I always suspected that the MBTA loosened up on their standards (schedules) in order to fake the achievement of "good service" and this data may be the first evidence of it. No wonder the MBTA is reluctant to allow any third parties to go out and make measurements of its system performance.

The data also shows remarkable variations in arrival times or headways, with a range between 1 and 13 minutes. The scheduled headway time is roughly in the middle of this wide range, but the message still is extraordinarily erratic performance on the Green Line.

The variations in Load Factor are also very revealing. Cars are going by with only 5-10% of the seats occupied in the peak hour, even in the peak flow direction, while peak directional loads show standees significantly outnumbering seated passengers. The DEIR properly notes the importance of reliability in service as possibly being more important than capacity (p. 3-98).

My major complaint with the transit analysis is Table 3.11-3, which considers transit levels of service as a function of load factor. It appears that this table is an average used for standard subway cars -- not the LRV trolleys used on the Green Line. The LRVs tend to have more floor area consumed by seats, with lesser room for standees. For example, there is rarely enough room for the aisle width on LRVs to accommodate more than 2 standees. Red Line cars have wall- mounted seats with the capability for at least 4-across standees in the aisles.

A proper inclusion of LRV design in the load factor/LOS analysis will provide a much more accurate evaluation of congestion on the Green Line. Note that the highest measured Load Factor of 2.5 is only 80% of the "crush load" as defined in the Table. This implies that every train during the day was operating at less than 80% of crush load. Don't tell that to people who regularly ride the Green Line.

The DEIR also considers the Green Line bottleneck at Arlington Street, which is appropriate, but the data on capacity and flows does not include the essential facts on erratic headways loadings which were measured at the Fenway stop. Average performance on the Green Line means little, given the wide swings in performance. What we need are measurements of headway and loading variations during the peak hour for trains going through Arlington. The MBTA and CTPS may have this information, but it is understandable that they might not be very forthcoming with it.

A good example of the ills of the Green Line can be found in the Prudential Center Redevelopment EIR, just released this month. Table III-20 lists what appears to be service improvements between 1986 and 1988, in terms of more trains and reduced headways. The table shows a calculated 33% increase in system "capacity", yet the counted number of riders has actually dropped by 11 per cent. If empty bunched trains are run along the system, this may explain why service has allegedly "improved" while ridership actually goes down.

I have a great idea for transit mitigation. Let a consortium of HAM, JMB, UDC and Macomber run the Green Line, instead of the MBTA. Things couldn't get much blunderingly worse than they are now, and the developer team has at least demonstrated they have a handle on the erratic nature of service and how to measure it. So let's fire MBTA management and contract out the operations to the developer team. The only alternative would be to contract it out to the Japanese. ⑳

Sincerely,

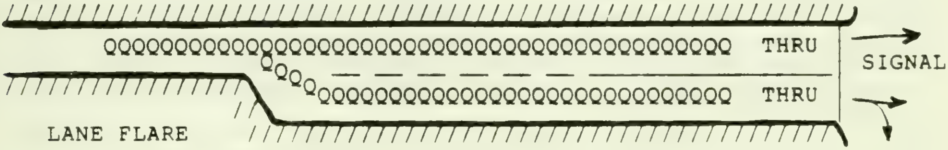
Stephen H. Kaiser, PhD
Traffic & Transportation Engineer

S. Kaiser
191 Hamilton Street
Cambridge, Mass.
November 1, 1989

SHORT LANE IMPLICATIONS FOR INTERSECTION CAPACITY

Short lanes are a physical constriction on intersection approaches. Capacity is reduced when queues grow long enough to interfere with access to another lane. Queue growth accelerates when vehicles that might use another lane become concentrated in one lane. More signal time is required to process this longer queue.

There are four types of short lane situations. A Lane Flare occurs when the adjacent lane affected is part of the same movement.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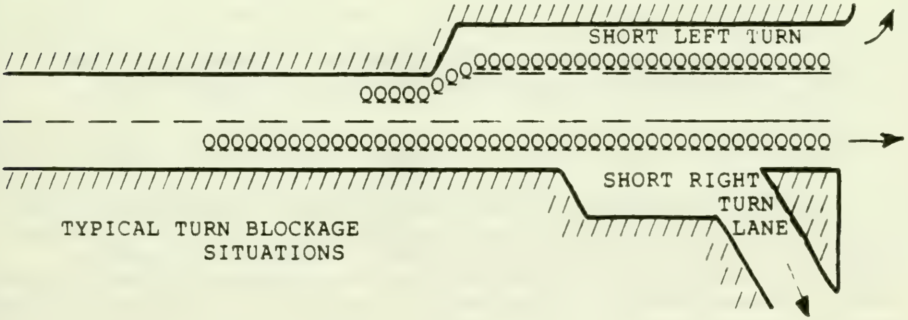
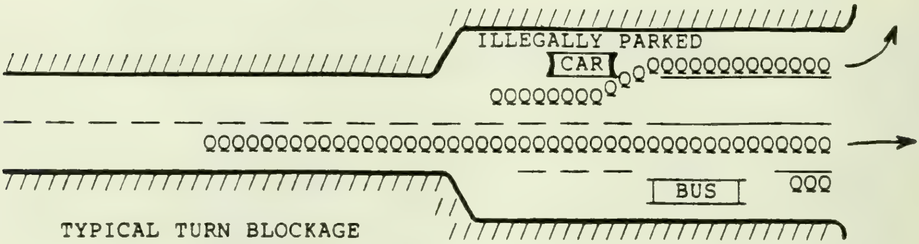
LANE FLARE

Turn Blockage is a more complicated short lane case. Blockage occurs when the adjacent lane is part of another movement or phase. Common examples are free right turn lanes which are blocked by queues of through traffic, or short left turning lanes which produce overflow queues which block through lanes.



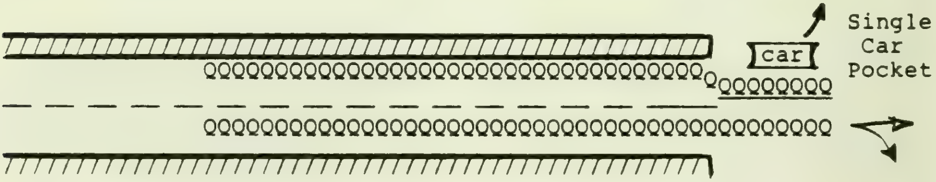
TYPICAL TURN BLOCKAGE SITUATIONS

Lane Obstruction is a third type of short lane effect and occurs when stopped vehicles block a moving lane near an intersection. These stopped vehicles could be a bus, a waiting taxi, or an illegally parked car.



TYPICAL TURN BLOCKAGE SITUATIONS

"Pocket Slots" are very short lanes which exist informally in the middle of intersections. The first left turn vehicle may occupy a "pocket" slot between the opposing flows of traffic, with following vehicles swinging around to the right of the stopped car. However, the second or third left-turn vehicles joining the queue will block the leftmost through lane. In practice, there would be a very short left turn lane one or two cars long. This type of short lane will actually increase the capacity of some intersections.



SHORT "POCKET" SLOT

In summary, short lane effects are composed of lane flares, blocked turns, lane obstructions and pocket slots.

PAST STUDIES OF SHORT LANES

The only published material on short lanes that I have been able to uncover is a progress report for the 1985 Highway Capacity Manual -- "NCHRP Signalized Intersection Capacity Method," February 1983, prepared by JHK Associates. Short lanes were discussed briefly on pages 4-3 and 4-4, yet the methodology was not integrated into the regular capacity calculation procedures.

Unfortunately, between this 1983 report and the 1985 manual, any discussion of short lanes was dropped, and the only remaining reference in HCM85 to short lanes is inferred from Figure 9-2, which requires that analysts should record the length of the storage bay for right or left turns, L_s. However, the length of storage bays is never used in any of the Chapter 9 calculations.

Short lane effects can have significant implications for any measurements of saturated lane capacity and hence intersection capacity. The wide variations in measured lane capacities so far encountered by TRAFFC studies probably could be explained at least in part by the effect of short lanes.

EXAMPLES OF SHORT LANE LOCATIONS IN THE CAMBRIDGE AREA

- Alewife Brook Parkway & Route 2 signals, with conflicting queues occurring on all three approached in the AM and PM.
- Alewife Brook Parkway at Rindge -- short left turn slot in AM Peak, Rindge Ave. Extension -- right turn blocked AM + PM
- Lake Street and Mass. Avenue, Arlington -- short 2-lane approach on Lake Street.
- Fresh Pond Parkway inbound at Mt. Auburn Street (2-lane approach flares into 3-lanes -- which were previously painted for 4-lanes)
- Soldiers Field Road at Eliot Bridge (lane flares)
- Harvard Square -- taxis, illegal parking
- Central Square -- River Street right turn blocked, Illegal parking and buses blocking lanes
- Longfellow Bridge approach to Charles Circle
- Prison Point Bridge & O'Brien Highway at Science Museum. Short left turn lanes for long cycle operations
- Third Street and O'Brien Highway -- short lane approach on Third Street.
- Columbia Street and Cambridge Street -- short right lanes

EXAMPLES OF SHORT LANES OUTSIDE THE CAMBRIDGE AREA

- Hartwell Avenue jughandle (Lexington) -- for east and westbound and jughandle turns in the AM peak.
- Route 1A and Revere Street, Revere -- eastbound parked cars northbound "pocketed" left turns
- Beacon and Arlington Street (Storrow Exit) short right turn lanes
- Berkeley and Beacon Street, Back Bay Illegal parking in turn lane
- Middlesex Turnpike & Route 128 SB ramps (Burlington) -- taper on the two-lane left turn
- Numerous left turn slots on Route 9 from Boston to Worcester

QUEUE LENGTH FORMULAS -- 1983 REPORT

How does the geometry of short lanes affect the capacity of lane group flow. Clearly, if the volumes are low or the turn lanes are very long, the queues will not cause blockage and short lanes will not be an issue.

The point at which average lane queues begin to start blocking conflicts is defined by the 1983 report as the Critical Queuing Distance (D_C).

$$D_C = \frac{L \quad V \quad R}{3600\ n\ (1.0-V/s)} \qquad \langle 1\rangle$$

TECHNICAL NOTATION

Dc = Critical Queuing Distance (average), feet
L = average vehicle space in queue (20-22 feet)
V = average hourly volume in lane group, vph
R = effective Red Time, in seconds
n = number of lanes in lane group, at stop line
V/s = flow ratio for lane group
s = saturation flow rate, vph per lane
PHF = Peak Hour Factor (hourly flow/4xpeak 15-min flow)
C = cycle time, in seconds
Ts = time that queues grow in the short lane, in seconds
Tb = time from beginning of turn blockage until last car is cleared from the queue, in seconds

TECHNICAL NOTATION (Continued)

W = time for start-up wave to reach last car, sec.
Vel = Individual vehicle speed, feet per second
A = acceleration/deceleration of individual vehicles
Ds = length of the short lane, in feet
Db = length of the queue extension beyond the block point

EXAMPLES OF THE 1983 SHORT LANE FORMULA

(a) Single lane approach, V = 800 vph, R = 60 sec., V/s = 0.50

Dc = 22 x 800 x 60 / 3600 /0.50 = 590 feet

(b) Single lane approach, V = 1100 vph, R = 50 sec., V/s = 0.70

Dc = 22 x 1100 x 50 / 3600 /0.30 = 1120 feet

(c) Single lane approach, V = 1100 vph, R = 30 sec., V/s = 0.70

Dc = 22 x 1100 x 30 / 3600 /0.30 = 670 feet

The difference between (b) and (c) is that shortening the cycle length by 40% also trims the queue lengths by 40%. Delays are also cut by 40%.

We can see that there are several responses to short lane conflicts :

(1). Shorten the signal cycle
(2). Lengthen the turn lane
(3). Allocate more Green time, if available, to the short lane group

QUEUE LENGTH FOR SHORT LANES, 1983 REPORT

The 1983 report proposed a rather complicated method for calculating saturated lane volumes. It required an initial calculation of V/s, then an evaluation of short lane effects and then a recalculation of V/s under short lane conditions. The procedures were not clear and there was no simple plug-in formula for lane capacity with short lanes.

The presence of V/s in this equation is peculiar. Why should the degree of loading of other phases have any effect on the fixed time operations of one approach? The results show distortedly long queues on heavy approaches. Because volumes have already been taken into account in the formula, an additional adjustment for V/s seems equivalent to double counting.

======= ANALYSIS METHODS FOR ESTIMATIONS OF QUEUE GROWTH ========

Before we can understand the effect of short lanes on queues, we must develop accurate models of queue growth under conditions of uninterrupted long lanes.

Several assumptions must be made from the start. Vehicles arrive with even spacing, at the same cruising speed, and with the same braking profile. There are no special capacity limitations such as illegal parking or geometrical obstructions. The intersection has enough capacity to handle all the approach volume on the average signal cycle, without residual queuing.

The greater the approaching lane volumes, the faster the queues will grow. Queue growth will also be higher because the queue will physically extend towards the arriving vehicles. Each new vehicle coming to a stop will have traveled 20-22 feet less distance than the car immediately in front. This distance is also called the Jam Spacing or L.

The arrival time at any one point between consecutive vehicles is 3600 n/V seconds, and is also the headway. This arrival time is reduced by the time to travel 20-22 feet. For example, a flow of 600 vph in one lane would produce an arrival time of 6 seconds, less 0.5 sec, which is the time to travel 22 feet at 30 mph. The queue would grow at a rate of one car every 5.5 seconds.

The vehicle arrival time averaged through the peak hour is

$$\underline{\text{ARRIVAL TIME}} = 3600\ n\ /\ V\ -\ L/Vel \quad \text{sec./veh.} \qquad \langle 2\rangle$$

and with the adjustment for peak hour factor, PHF

$$\underline{\text{PEAK ARRIVAL TIME}} = 3600\ n\ PHF\ /\ V\ -\ L/Vel \quad \text{sec./veh.} \qquad \langle 3\rangle$$

The peak arrival time can be inverted to yield

$$\underline{\text{QUEUE GROWTH RATE}} = \frac{L}{3600\ n\ PHF\ /\ V\ -\ L/Vel} \quad \text{feet/second} \qquad \langle 4\rangle$$

The queue length at any time T is

$$\underline{\text{QUEUE LENGTH}}\ (T) = \frac{L\ T}{3600\ n\ PHF\ /\ V\ \ - L/Vel}\ \text{feet} \qquad \langle 5\rangle$$

At the end of the Red time R, the light turns green and the queue begins to move out from the front, while incoming cars continue to add to the rear of the queue. The queue of standing vehicles becomes shorter and shorter as the front of the queue dissipates while the tail of the queue continues to grow.

From field observation, drivers respond to start-up movement with a 1-second response time. A "start-up wave" moves backwards through the queue at about 15 miles per hour. Under the heaviest traffic conditions, the tail end of the queue grows at a maximum of 10 mph, so eventually the "start-up wave" catches up with the "stopping wave". At this point, the queue ceases to grow and is "cleared out," with no remaining stopped vehicles. This time is defined as the "Wave Time" W, measured from the beginning of Green until the start-up wave reaches the end of the queue.

The total time of queue growth is therefore R + W, and

$$\underline{\text{QUEUE LENGTH}}\ (R + W) = \frac{L\ (R + W)}{3600\ n\ /\ V\ \ - L/Vel}\ \text{feet} \qquad \langle 6\rangle$$

The start-up wave passes through the same queue length in time W. With a reaction time of one second, this queue length is LW.

$$\underline{\text{QUEUE LENGTH}}\ (R + W) = L\ W \qquad \langle 7\rangle$$

Equations <6> and <7> can be solved for time W, and when W is substituted into equation <6> above, the result is

$$\underline{\text{FINAL QUEUE LENGTH}} = \frac{L\ R}{3600\ n\ PHF\ /\ V\ \ - L/Vel - 1}\ \text{feet} \qquad \langle 8\rangle$$

A comparison of three sample queues shows that Equation 8 differs from the 1983 report (Equation 1), in some cases quite significantly. The 1983 formula appears to be unduly sensitive to V/s, and does not include a Peak Hour Factor.

3 EXAMPLES (SINGLE LANE APPROACHES)	EQUATION 8	1983 REPORT
(a) V=800 vph, R=60 sec., V/s=0.50	520 ft.	590 ft.
(b) V=1100 vph, R=50 sec., V/s=0.70	760 ft.	1120 ft.
(c) V=1100 vph, R=30 sec., V/s=0.70	455 ft.	670 ft.

EMPIRICAL VERIFICATION

Average vehicle spacing of 22 feet was measured from Alewife Brook Parkway at two locations. In prior years, 25 feet has been a typical value, but the widespread use of smaller cars has resulted in denser vehicle packing in queues. The 1983 NCHRP report suggested a value of 20 ft. spacing between vehicles, but only in rare samples did I find average vehicle spacing at 20 feet.

Queue growth is difficult to correlate with volumes and geometrics, because of the often random arrivals of vehicles. Any measurements would require several field observers, recording data on the time and location of each car as it stopped, as well as approach data on instantaneous volumes, cruise speeds, and an identity tag for each car.

However, for a congested approach, the approach volumes can be assumed to be 1800 vph per lane as they approach the stop line. From Eq. <2>, this flow represents a vehicle every 2 sec., less 0.5 sec., so that each car would come to a stop 1.5 seconds after the car immediately in front. Measurements of this stopping wave were made in 1985 at the Alewife/Route 2 area during congested flow to observe the stopping wave, and indeed vehicles were stopping at an interval of 1.5 seconds in each lane.

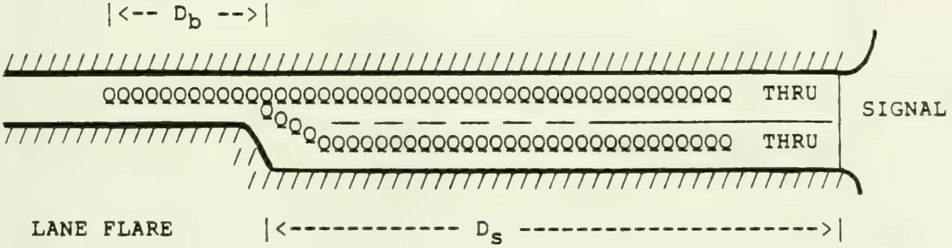
Data used above on the start-up wave was derived simply from empirical observation of the average reaction time of each driver on Alewife Brook Parkway. This reaction time of 1 second per car resulted in the start-up wave having a speed of 15 mph. Note that the start-up wave would begin at the front of the queue, and move backwards at a speed of 15 mph. Meanwhile, the stopping wave would have begun earlier, but would be moving more slowly at 10 mph.

One can also check the interaction of stopping and start-up waves. If the congested queue is long enough, the start-up wave should catch up with the stopping wave about 200 feet from the Rindge Avenue stop line, based on Alewife signal conditions in 1985.

Observations of the congested 1985 AM peak at Alewife confirmed this estimate, with the startup peak catching up with the stopping wave in the vicinity of Arthur D. Little, which is about 2000 feet from the Rindge Avenue signal.

============== QUEUING CALCULATIONS FOR SHORT LANES ==============

The simplest example of short lane queuing is a single lane road which flares into a 2-lane approach to a signal. The first stage of queuing would be conventional, until the queue filled the short lane.


|<-- D_b -->|
QQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQ THRU
SIGNAL
QQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQ THRU
LANE FLARE
|<------------ D_s --------------------->|

In most real situations, the short lane flare will become blocked before it is filled, because the left lane tends to have slightly longer queues -- mainly due to through vehicle momentum and pavement markings.

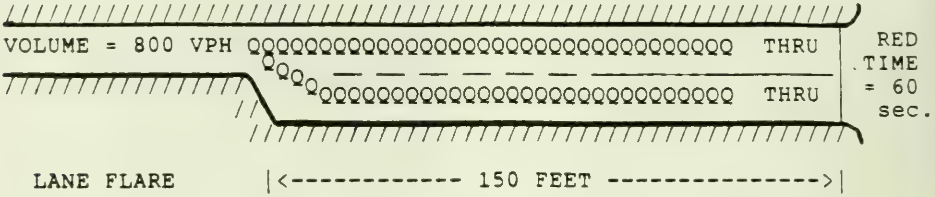
How should we deal with this uneven or unbalanced queuing? A good analogy can be made capacity adjustment for multiple lanes, whereby 2 lanes are given a penalty or inefficiency factor of 1.05 to account for uneven use of multiple lanes. If we assign a 5% adjustment for uneven queuing, the analogy would be comparable to the right lane queue being only 90% the length of the left lane queue. This 10% difference in queue length appears reasonable based on random observations of multiple queuing in urban traffic.

In practical terms, it means that the situation is almost exactly equivalent to unbalanced traffic queuing when 10% of the length of the short lane is cut off. The heavier the right turn volume, the more balanced will be the queuing. It has also been my observation that very short lanes close to the signal will result in very high incidence of uneven queuing.

The second stage of queuing occurs in a single lane, as the queue extends to its ultimate length, $D_s + D_b$. In capacity terms, the two queues operate independently in response to vehicle start-up. The start-up wave moves down the left lane until it gets to the end of the queue, and in capacity terms it is this queue which must be handled by the signal.

================= QUEUE GROWTH FOR A SIMPLE LANE FLARE ==========

In the example that follows, the right hand lane flare is 150 feet long, red time is 60 seconds, the PHF is 0.90 and the approach volume is 800 vph.



The first stage growth rate is

$$\underset{\text{(initial)}}{\underline{\text{QUEUE GROWTH RATE}}} = \frac{L}{3600\ n\ PHF\ /\ V\ -\ L/Vel}\ \text{ft/sec.} \qquad \langle 9\rangle$$

$$\text{....... EXAMPLE} = \frac{22}{7200\text{x}.9\ /\ 800\ -\ 0.5} = 2.9\ \text{ft./sec} \qquad \langle 10\rangle$$

and the second stage growth rate is

$$\underset{\text{(blocked)}}{\underline{\text{QUEUE GROWTH RATE}}} = \frac{L}{3600\ (n-1)PHF/V\ -\ L/Vel}\ \text{ft./sec.} \qquad \langle 11\rangle$$

$$\text{........ EXAMPLE} = \frac{22}{3240\ /\ 800\ -\ 0.5} = 6.2\ \text{ft/sec.} \qquad \langle 12\rangle$$

The queue lengths at the end of stage 1 are :

$$0.9\ D_s = \frac{L\ T_s}{3600\ n\ /\ V\ -\ L/Vel}\ \text{feet} \qquad \langle 13\rangle$$

and at the end of the second stage, the additional queue length is

$$D_b = \frac{L\ T_b}{3600\ (n-1)/V\ -\ L/Vel} \quad \text{feet} \qquad \langle 14 \rangle$$

The total length of the queue is

$$D_s + D_b = W\ L \qquad \langle 15 \rangle$$

while the start-up wave time W is part of the total time to generate the complete queue,

$$R + W = T_s + T_b \qquad \langle 16 \rangle$$

Solving for D_b yields

$$D_b = \frac{RL\ -\ 0.9\ D_s\ (3600\ n\ PHF\ /\ V\ -\ L/Vel\ -\ 1)}{3600\ n\ PHF\ /\ V\ -\ 3600\ PHF\ /\ V\ -\ L/Vel\ -\ 1} \qquad \langle 17 \rangle$$

$$.....\text{EXAMPLE} = \frac{60 \times 22 - 0.9 \times 150\ (7200 \times 0.9/800 - 0.5 - 1)}{7200 \times 0.9\ /\ 800 - 3600 \times 0.9\ /\ 800 - 0.5 - 1} \qquad \langle 18 \rangle$$

$$= \quad 170 \text{ feet}$$

For this example, we can use the equations above to calculate these results :

EXAMPLE : Total queue length = 135 + 170 = 305 feet. or 14 cars
Total cars queued = 2 x 135 + 170 = 440 feet or 20 cars
Time which queuing in the short lane = T_s = 46 sec.
Time for single lane queuing = T_b = 27 seconds
Total time from queue beginning to end = 73 sec.

These results can be compared to the same traffic situation with long lanes and no blockage in 2 lanes. From Equation <8>,

QUEUE LENGTH (no blocking) = D_o = 200 feet <19>

With similar assumptions of uneven queuing, the queue lengths in the lanes would be 210 feet and 190 feet. Just under 10 cars would be in the queue, compared to a queue length of 14 cars for the short lane situation.

Capacity is only 210/305 = 69%, or a 31% loss of capacity due to the short lane. To account for short lanes in the regular capacity calculations, the base saturated lane capacity would be reduced from 1800 by 31% or 1240 vph.

From this analysis, we can see that increasing the length of the short lane from 150 feet to 210 feet would result in unblocked flow in two lanes. The result of increasing the short lane length by 1/3 is to restore the 1/3 lane capacity loss on the approach.

It should be emphasized that lane flare analysis assumes smooth movement in two lanes past the stop line on the green phase. If left turn conflicts or heavy pedestrian volumes interfere with this smooth flow, traffic could be slowed and the effects of short lanes nullified.

For example, traffic queued behind a stopped left turning vehicle would be inclined to switch into the right lane. Such movements could even up any lane queuing imbalance due to short lanes, especially if the lane changes are made smoothly at speed. But if stopped vehicles in the left lane try to jump into a moving right lane traffic flow, the right lane flow could be disrupted and reduced. The primary question is : will X number of left turn vehicles be large enough to nullify the effects of lane blockage occurring Y % of the time? If would appear reasonable that if X number of left turns had the effect of stopping the left lane Y % of the time, the effects of the left turns would nullify the short lane effects. For this calculation, we obviously need to know more about the percentage of time vehicles are stopped in the left lane.

===============================

Now we have a procedure to modify the methods of Chapter 9 of HCM85 for lane flares.

PROCEDURES FOR CALCULATING CAPACITY EFFECTS OF SHORT LANE FLARES

1. Make a judgment whether left turn conflicts at the signal are likely to override any effects of short lanes. Record the reasons for this judgment.

2. Measure the length of the short lane D_s
   List the values for Red Time R, number of through lanes n, approach volume V, PHF, approach cruise speed Vel, and use spacing L = 22 feet.

3. Calculate the no-block queue length D_o using equation <8>

$$D_o = \frac{L\ R}{3600\ n\ PHF\ /\ V\ -\ L/Vel\ -\ 1}\ \text{feet}$$

   If Do is less than Ds, blockage will not occur, and normal lane capacity calculation methods can be used.

4. Calculate the queue increment D_b using equation <17>

$$D_b = \frac{RL\ -\ 0.9\ D_s\ (3600\ n\ PHF\ /\ V\ -\ L/Vel\ -\ 1)}{3600\ n\ PHF\ /\ V\ -\ 3600\ PHF\ /\ V\ -\ L/Vel\ -\ 1}$$

5. Calculate $1800 \times D_o/(D_s+D_b)$ as the new unadjusted saturated lane capacity and utilize in all further capacity calculations.

……

to be continued ....

The next sections will deal with
- turn blockage of a "free right turn lane"
- spillover from a short left turn slot, blocking a through lane
- right turn queues which block a through lane

S. Kaiser 1

V/C ratios, queue lengths, levels of service and vehicle delay all represent criteria used for evaluating intersection congestion. Levels of service and vehicle delays are included in the main body of the report. The V/C ratios and queue length data are placed in the Appendix for the few technical readers interested in reviewing them. This was done both to reduce the bulk of Volume 1 (as suggested by the comment letter) and to reduce printing costs.

S. Kaiser 2

The proposed traffic improvements are presented in Section 3.4. Under this preferred scenario (Scenario #2), the impact of the proposed improvements on the environment are much less than those proposed in the other scenarios. At the intersection of the Riverway and Brookline Avenue (Location 12) all improvements can be made entirely within the existing curblines.

S. Kaiser 3

All technical comments regarding intersection operations were taken into account when we conducted the analysis. Some intersections were reanalyzed and are consistent with needs of the future. Intersections in question have been addressed below with the appropriate changes or explanations. The FPIR/FEIR has intersection concept plans which show the geometric improvements suggested.

S. Kaiser 4

The availability of left turn bay storage is being taken into account at all locations that require mitigation. We have computed the storage length for left turning vehicles based upon a 95% probability of random arrivals (Poisson Distribution). Several locations, rotary intersections and Longwood Avenue at Chapel Street, experience queue backups through adjacent intersections. The required CINCH software is not capable of modeling such events. However, we have rerun all rotary, and Longwood Avenue CINCH runs so that these adjacent intersections operate on a common signal cycle. We have completed PASSER 2 runs which analyze the time-space diagrams for the rotary, and Brookline Avenue intersections. This work was submitted to the BRA and BTD for their reviews and comment on December 1st, 1989. The

FPIR notes two (2) options for Park at Beacon. The first option is a peak hour restriction for eight spaces on northbound Park and three spaces on westbound Beacon, and the second option calls for shifting the residential parking. Option 2 will not remove/reduce the on-street supply at this intersection.

S. Kaiser 5

The 75% plans for this intersection have been prepared by Vanasse Hangen Brustin, Inc. under contract with Boston University. Improvements at this intersection include signal retiming, new phasing, a pedestrian phase and a coordinated signal with the University Road at Commonwealth Avenue. These improvements will increase capacity while allowing time for pedestrians to cross safely.

S. Kaiser 6

University Road at Commonwealth Avenue is stop sign controlled, while the other three approaches are signal controlled. We analyzed the right turns as having only 57 seconds of stream time out of a 109 second cycle. We agree that these right turning vehicles will stop due to pedestrians in the crosswalk, or thru traffic on Commonwealth Avenue. The 1995 Build LOS is F/D after signal improvements.

S. Kaiser 7

See response to EOTC comment 3.

S. Kaiser 8

The transit level of service criteria, in Table 3.11-3 of the DPIR/DEIR were directly excerpted from the 1985 Highway Capacity Manual. In addition to the table, the maximum passenger volumes were also calculated based on the load factor, and can be found in Appendix II. According to the volumes in the table, it is clear that the level of service criteria and corresponding load factors are appropriate to the analysis procedures.

S. Kaiser 9

The transportation consultants for Olmsted Plaza measured the headways at Fenway Station. Measurement of headways at several other locations was well outside the scope of studies for this project. The consultants agree that it would be valuable to have a more extensive data base to use in assessing conditions on the Green Line.

S. Kaiser 10

The proponent would much prefer to support the ongoing efforts by MBTA management to improve the service it currently provides.

audubon circle
neighborhood association

November 14, 1989

John DeVillars, Secretary
Executive Office of Environmental Affairs
MEPA Unit - 20th Floor
100 Cambridge Street
Boston, MA 02202

RECEIVED
NOV 15 1989
MEPA

Re: EOEA File No. 7643
msted Plaza Associates

Dear Secretary DeVillars, ①

The following comments are submitted with regard to the above-referenced project's Draft Environmental Impact Report.

I. TRANSPORTATION

A. Traffic and Public Transit - One of the more crucial elements in the development of this project is the impact it will have on traffic and the mass transit system. The Draft Environmental Impact Report (Report) studies 24 intersections in the vicinity of the project, and analyzes the levels of service available on public transportation systems. As explained below, the Report fails to accurately calculate the existing demands on the road and transportation systems, and therefore fails to accurately predict the impacts the proposed project will have on these systems.

(1) As indicated in the Report, analyses were undertaken of intersections based on traffic counts at morning and afternoon peak hours. Similarly, counts were undertaken to determine ridership on the mass transit lines. It is also made explicit in the Report that those counts were taken during the summer months of June, July and August. The months of June, July and August are typically the quietest months of the year, especially in this area of the City, due to the hiatus in college classes. Thousands of students leave the area, or stop commuting in to the many schools concentrated here. Faculty and staff levels also decrease significantly. The summer months also mark the traditional vacation season, and the working population significantly decreases as well. To assume the counts taken are representative of the nature of demands on the road and transit system is therefore a basic flaw in the Report. It is strongly urged that the proponent reconduct these counts now, when schools and universities are in session and the working population is in full force, before drawing any conclusions about traffic, levels of service on transit systems, or success in mitigation efforts. ②

(2) The Report discusses a secondary access and egress opportunity as a way to improve traffic flow from and to the site. In particular, the Maitland Street Connector is proposed (see p 3-37). During the course of meetings with the proponent, it has been made clear that this proposal is no longer considered feasible or desirable. Therefore, most of the the proponent's traffic mitigation proposals (beginning at p. 3-68) become suspect to the extent they are based on the Maitland Street Connector being in place. The proponent must therefore re-visit these mitigation proposals to ensure that they have meaning.

(3) Also with regard to the Maitland Street Connector: because the proponent has decided to dispense with this idea, the Report fails to describe the traffic impacts that will result due to "unstructured" use of this back door approach. In particular, if Maitland Street is not reconfigured to allow rear access, such access and egress can and will occur over Miner Street. Although Fullerton Street (the street which defines the site's rear property line) is not shown as being physically connected to Miner Street, there is indeed such a connection over the MBTA Riverside tracks. Visitors and patients to the Harvard Community Health Plan (and others aware of the connection) use this access point on a daily basis. It therefore must be clearly spelled out how use of this "back door" approach will be prevented and, if not prevented, what the resulting traffic patterns and flows will be, and the concommitant effect these patterns and flows will have on the Audubon Circle neighborhood and its residents.

(4) In both the traffic and transit use analyses, the Report indicates that peak commuter hours did not coincide with traffic and transit use associated with Red Sox games. We feel strongly that this conclusion is not warranted (due in part, again, to the time of year the traffic study was undertaken), and neatly avoids a troublesome fact of life: rush hour and Red Sox traffic create havoc in the area. (We appeal to anyone who has tried to negotiate Kenmore Square, or been on a Green Line car, between 5:30 and 7:30 p.m. on a game night!) The Report is therefore deficient in this respect and must be amended.

(6) Table 3.11-16 (p. 3-116) indicates a no-build demand on the Red Line's Ashmont/Braintree branch to be in excess of capacity, and yet finds that the 1995 build and no-build demand is less than capacity. Some mistake seems to have been made.

(7) A crossover at the Riverside Fenway T stop was suggested as a way to increase service from the station into town during the afternoon rush hour. (See p. 3-117.) If too many trains destined for Riverside come at one time, indeed, a car or two may be at "low utilization." (We question whether any car would be at "very" low utilization during rush hour.) At the same time, if cars come at regular intervals during rush hour, it is a rare car that stops at the Fenway station en route to Riverside that is not **standing room only.**

To call for regular turn-around of cars at Fenway will likely create a back-up of commuters at the Fenway station waiting to continue into Brookline. During rush hour, it would make more sense to call for a few turn-arounds at the Reservoir Station, which is bigger, better lit, and which is at a stop along the line where the cars are much more likely to be at "low utilization."

B. Traffic Mitigation - The Report details a number of proposals to mitigate the traffic problems that currently exist at the various intersections studied, as well as those that will be generated by the project. In most of these proposals, other entities or government bodies must participate, approve the plan, or take direct action. ⑧ Without knowing whether or when these other entities will take the necessary actions, no one can be assured that the problems generated will be dealt with. The Report, therefore, not only fails to accurately portray the problem (due to unrepresentative counts), but also fails to provide any succinct answer on how to deal with it. We must therefore find that the Report is not instructive or helpful in defining the project's impacts or ways to mitigate them.

C. Pedestrian travel - Included in the concept of transportation is pedestrian access. Again, the Report indicates a study of pedestrian flows was conducted during the month of August (p. 3-120). ⑨ Therefore, all assumptions made and conclusions drawn are suspect because of the dramatic increase in the pedestrian traffic once the summer months have passed. Further, a discussion of the impact Red Sox games have on pedestrian travel must be conducted, for the intersection of commuter traffic with this phenomenon cannot be avoided. It is strongly recommended that this element of the Report also be revisited and discussed, so that the project impacts can be better described.

Also in connection with pedestrian travel, the proponent indicates paths of access to the site other than those currently used. In particular, no discussion is made of the [non-signalized but heavily used] crossing at the summit of Park Drive directly over the MBTA ⑩ tracks, nor how increased traffic may affect pedestrian safety at this crossing. This crossing is the most direct link to the site from its north and west side (for example, if one were walking to or from the Cleveland Circle Green Line stop on St. Mary's Street). The Report shows crossings at other locations (see Figures 3.12-1, 2, 3) which are rarely used now, otherwise inconvenient, and probably less safe to the extent they are on a descending slope to on-coming traffic, and on a blind curve. The analysis on pedestrian paths must therefore be amended to take reality and safety precautions into account.

Also, to the extent the Report analyzes various reconfigurations of traffic flow, lights and road layout, this factor (i.e., the preferred pedestrian crossing at the summit of Park Drive) must be incorporated.

II. AIR QUALITY

The Secretary asked for a description of the traffic impacts on air quality at various locations and intersections. We must reiterate that the traffic counts taken at the twenty-four intersections cannot be deemed representative because they were conducted during the summer months. Therefore the Report cannot be deemed accurate in its determination of which intersections to study (i.e., intersections with LOS D, E or F), nor of the concentrations of carbon monoxide and other emissions that are currently or may be emitted. This element of the Report must therefore be re-drawn.

III. WATER AND SEWER

Throughout this section in the Report, the proponent assumes a historical peak staff level of 3000 persons in calculating water usage and sewage flows. This assumption is inappropriate to the extent the proponent has indicated that a staff level of 5000 employees is expected when the project is fully built. Such a significant discrepancy between the usage assumed and that which will take place militates strongly for a full re-examination of this issue to ensure the water and sewer systems are adequate to meet the demands this project will create.

IV. HAZARDOUS WASTE

A. Use - The Report indicates that no manufacturing or chemical processing will be undertaken on-site, therefore special precautions need not be taken to prevent discharges of hazardous materials down waste water drains. (See p. 4-76.) To the extent chemicals, radioactive isotopes, biological materials, and other potentially harmful substances will be used or generated on the site, there is always a potential for inadvertant as well as purposeful discharges. Establishment of "protocols" does not, therefore, address this fact, nor the exposure that will be occasioned either by residents, or the rivers or harbor into which these discharges ultimately flow. We feel that much more stringent measures must be taken my the proponent to prevent these discharges, which measure should not depend on the good intentions of either the tenants of the building, or their employees. ⑬

B. Transport - No adequate discussion was given in the Report on the delivery and transport of potentially harmful materials. Although the proponent discusses traffic flows generally, there are no assurances that spills, discharges or other opportunities of exposure to toxic or dangerous substances will or can be dealt with. For example, what emergency procedures or equipment will be available in the event of an accident (traffic or otherwise)? Who will be responsible for implementing a response? How will response readiness be monitored? To say other agencies or parties will comply with or be responsible for monitoring use of hazardous materials does not address how this project will impact its immediate environment.

V. WATER POLLUTION

The Report indicates that surface run-off will be reduced due to increased landscaping. On the other hand, a greater percentage of the site will be developed, traffic in and around the site will increase, and roof run-off will increase. Therefore, run-off from the roofs of the main building, the two new office (or office and hotel) buildings, the roof and decks of the parking garage, and all interior roadways will continue to drain into culverts, the Muddy River, the Charles River and, ultimately, the harbor. It is unclear (a) why, although this is deemed "clean" run-off, the MWRA prohibits roof run-off from entering the sanitary sewer system; and (b) why diverting road or roof run-off into the Muddy River and other water bodies is acceptable. We ask that these points be further developed and a better plan devised. ⑭

VI. SOLID WASTE

The Report indicates (p. 4-95) that the bulk of the construction debris will be disposed of by a contractor at approved landfill sites. This is an unimaginative response to an issue that should no longer be considered a secondary matter. Landfill space throughout the state, as well as the nation, is being exhausted at an incredible rate; it should not have to be repeated that alternatives to landfill disposal must be found.

The sheer bulk in brick, concrete and steel (as well as wood shelving and interior building materials) to be removed from the project site indicates that a cost-effective alternative to disposal could be devised. For the proponent to leave the matter in the hands of a contractor is not responsive to the issue of what impacts this project will have on the environment; the proponent must assume its rightful responsibility for the generation of such massive amounts of debris. This is not "somebody else's problem." This is everyone's problem, and the proponent must be among those held accountable for the societal costs of the project. Unless the proponent is prepared to compensate society for the creation of this mass of "garbage," it should come up with a plan to recycle these materials in a way that either benefits society, or does not have a negative impact (such as contributing to the exhaustion of landfill sites. ⑮

VI. NOISE

The Report indicates that much of the noise that may be created by the project will be generated by construction vehicles and by traffic. If one were to accept this, the issue raised earlier in these comments must be reiterated: traffic counts and noise studies were done in the quietest months of June, July and August. The Report therefore cannot fully document the levels of noise currently experienced, nor clarify the projected noise levels. ⑯

The Report also fails to consider the impact of increased bus service on city streets in and around the project that the proponent advocates. In particular, the Report recommends coordination with and expansion of the shuttle bus service offered by MASCO. For the record, the MASCO buses are typically old, noisy and burn gas inefficiently. To increase the level of service through use of such vehicles will have a negative impact on noise levels as well as air quality in the neighborhoods. We therefore recommend a more exacting review of this proposal, its impacts, and ways to mitigate the known negative impacts in the event service levels are increased. (The problem is particularly acute on Park Drive where fairly steep slopes cause buses to use squealing brakes, down shift, and belch noisome exhaust.)

VII. SCALE

A. Wind - While the MEPA process does not typically entail review of matters such as wind and shadow, the Report indicates that the geometric characteristics of the proposed development and the level of public concern will influence MEPA's approach to these issues. If this is true, we believe this project warrants MEPA review. In particular, the project entails development of three new buildings on the site, two of which will be as tall as or taller than the existing Sears building. These new structures will be **at least** twice as tall as the buildings adjacent to the project site. In this light, the potential for significant wind impacts is clear; the Report's assertion that no such impacts will become manifest is contrary to acknowledged standards.

Furthermore, to compare the new buildings to the existing Sears tower is disingenuous: the concern and issue is how this project relates to the surrounding community and its physical characteristics, not how it relates to itself. Therefore, to the extent the new buildings, set closer to adjacent, off-site structures than the existing building, will be at least twice as tall as adjacent off-site buildings, a wind study is warranted. If the proponent is anxious to increase pedestrian activity in and around the site, it is in its own interest to ensure that the "nuisance winds the lift hats and litter up from the ground" will not occur.

It should also be stated that the development of the new buildings will create some rather narrow paths through the site which we believe will likely increase the likelihood of channelization referred to in the Report. It would behoove the proponent to exercise care in developing canyons to the extent it wishes to create a pleasant surrounding for its prospective tenants. Of greater concern to us, however, is the potential for creating a tunnel along the MBTA tracks which will make walking decidedly unpleasant for pedestrians seeking to circumvent the project, which tunneling would also make waiting at the Fenway T stop significantly more unpleasant. This issue again points to the need for further research into wind impacts.

B. Shadow - As indicated above, the new buildings will be at least twice as tall as the existing building and will be closer to the adjacent community. Therefore, the project will cast additional shadows, some of which will fall on adjacent residential buildings. We must state clearly that increased shadows on residential structures are unacceptable. While the renderings provided in the Report show that ⑲ (with the exception of 9:00 a.m. 9/23/89; Figure 4.2-7), increased shadows are not that extreme, for any group of residents to have its light taken away is an unacceptable impact. (We urge the reviewer to inspect these renderings closely: one will see that the light to be cut off is the only light these apartments may get for the entire day, as few apartment units have windows in the rear as well as the fronts of buildings.) This is a project in a residential area; the residential component cannot be compromised in favor of office use.

We are also displeased at the prospect of the Fenway MBTA station being thrown completely in shadow for the morning commute.

VIII. CONCLUSION

The proponent has prepared a lengthy report that has done much to describe the project and some of the likely impacts. From our point of view, however, the unrepresentative counts for the traffic, pedestrian and parking studies renders the Report's conclusions flawed, and the corresponding mitigation plans equally suspect. The assumptions made on the numbers of people on site during a typical day in a full-build plan were also low. These failures make it difficult if not impossible for the reviewing entities to determine whether the impacts of the project can be absorbed by the systems dedicated to particular purposes. These include the mass transit systems, the road system, the parking facilities, the sewer and water systems, the electrical systems, and other utilities. It also undermines the validity of conclusions concerning air quality and noise impacts. We therefore see significant room for improvement of the Report by taking more representative counts, as well as more accurate predictions on use.

Additionally, the Report fails to adequately address the hazardous and solid waste issues. We urge a better approach to these issues, and a more active role by the proponent in handling these matters.

Lastly, we urge more attention be paid to the wind impacts of this project, and a more sensitive approach to the surrounding residential community in terms of shadow. We are sure the architect for this project and the developers he serves can construct buildings that will reduce this impact on the adjacent buildings, and still have a viable project.

Thank you very much for the opportunity to comment

Very truly yours,

Dolores Boogdanian

Dolores Boogdanian

Audubon Circle 1

The Audubon Circle Neighborhood Association is one of the groups ostensibly represented by KAFNI. Most of the comments offered here are, therefore, handled in response to similar comments by KAFNI.

Audubon Circle 2

Please see KAFNI 7.

Audubon Circle 3

None of the proponent's current mitigation proposals rely upon the "Maitland Street Connector". This is clearly explained in Section 3.4.3 of this FPIR/FEIR. Current thinking on mitigation designs is outlined in Section 3.4. Commitments to mitigation are included in Appendix VI.

Audubon Circle 4

A. The Maitland Street Connector has been eliminated because its overall impact to reducing traffic impacts did not justify its cost. These monies can be more efficiently allocated to improving the LOS at other locations that sorely need mitigation.

B. The gate to the Harvard Community Health Plan from Fullerton Street will be closed (chained). The Olmsted site trips will not be permitted to use the Miner Street bridge which is currently a private way.

Audubon Circle 5

Please see KAFNI 7. Also note that separate traffic counts were taken for Red Sox events. This is explained in Section 3.2.4. The skepticism of the commentor notwithstanding, the facts presented in this section, and in Figure 3-4, show the effects of Red Sox events. Additional data will not change the information presented.

Audubon Circle 6

The projected MBTA Red Line Alewife-Ashmont/Braintree capacity will be 19,440 as indicated in Table 3.11-11. Table 3.11-16 of the DPIR/DEIR incorrectly identified Red Line capacity. The Red Line capacity should be 19,440 instead of 14,440.

Audubon Circle 7

Public transit scheduling strongly influences the critical link demand. The overall objective is to minimize delays within the entire Green Line system. In this case, the Arlington-Copley segment has the scheduling priority due to its demand. Therefore, the turn-around facility should be placed as close to the critical segment as possible.

Audubon Circle 8

The specific commitments of the developer to traffic mitigation are included in the Cooperation Agreement with the BRA and in the Transportation Access Plan Agreement (Appendix VI). These agreements include several specific commitments suggested by representatives of the Audubon Circle Neighborhood Association and KAFNI. Based upon the support of the project offered by the author of the comment at the PDA hearings the project proponent assumes that the concern has been adequately addressed.

The two agencies needed to implement the needed traffic mitigation measures are the Boston Transportation Department (BTD) and MDC. Execution of the agreement by BTD constitutes its commitment; a letter from MDC is included at the rear of Appendix VI.

Audubon Circle 9

An updated version of the pedestrian studies is included as Section 3.6 of the FPIR/FEIR. The proponent believes that the count data reflected in that section are reasonable for their intended purposes. While student populations may increase traffic in the non-summer months, the good weather in the summer months probably increases pedestrian traffic from other sources. Accordingly summer counts may not be the annual maximum counts, but they are probably reasonably good representative counts. It should also be noted that pedestrian capacities were great enough that some seasonal variation in traffic should not affect carrying capacities of the walkways.

Please note Section 3.6.2, which describes pedestrian mitigation measures.

Audubon Circle 10

Detailed analysis of pedestrian walkways and improvement plans for them have been included in Section 3.6.

Audubon Circle 11

In its scoping decision of May 3, 1989 the Secretary directed the proponent to seek DEQE guidance on the technique and assumptions to be followed in the air quality analysis. This directive was followed.

Also please see KAFNI 7.

Audubon Circle 12

The water and sewer calculations are made based upon the square footage of each particular use, not the number of employees. These calculations are acceptable to the MWRA and BWSC.

Audubon Circle 13

Section 2.2 of this report addresses this issue.

Audubon Circle 14

The MWRA prohibits roof run-off from entering the sewer system because it does not want to tax the system's capacity. The sewer system is designed to accommodate sewage. The road and roof run-off will be diverted into the storm drain system underneath Brookline Avenue, not the Muddy River. The storm drainage system is designed to accommodate such flows. This design is consistent with efforts to separate sanitary waste from less noxious run-off citywide.

Audubon Circle 15

The construction demolition described by the proponent is in no way unusual. It is a fairly standard part of any urban renewal or renovation project. It is normal, and in good judgment to leave the demolition disposal in the hands of contractors who do such things for a living. Demolition contractors realize which elements of the building have salvage value and which do not. They have access to the markets for construction salvage. These contractors account for the salvage value of the building materials in preparing and submitting their bids. Likewise, it is their business to stay informed of the locations where non-usable building materials can be deposited most appropriately. The proponent sees no benefit to competing with these licensed contractors in an area where it does not have the experience or wherewithal to do so.

Audubon Circle 16

Please see KAFNI 7. Also note that noise generation is a function of vehicle speeds as well as volumes. As vehicle speeds decrease noise generation decreases. Noise levels do not peak with highly congested conditions. Therefore the premise of the comment is incorrect. MASCO is in the process of upgrading their shuttle service to modernize the bus fleet. Any increases in the volume of buses would be insignificant given the mitigation measures that the developers have committed to.

Audubon Circle 17

It is within the purview of both MEPA and BRA to require that wind studies be done. The absence of a requirement by either body to require wind tunnel tests implies that they have been persuaded by the arguments of proponent's consultants, as spelled out in the PNF, in the scoping process, and in Section 4.1 of the DPIR/DEIR, that no wind tunnel tests are warranted for this project. The size and location of the project preclude the type of significant impacts associated with taller structures in downtown areas. The monies that would be needed to undertake such an effort are much better devoted to mitigation of more significant impacts.

Audubon Circle 18

In response to the repeated citation of concerns by the Audubon Circle Neighborhood Association, the Park Drive Building has been repeatedly scaled down over several months. The most recent deductions in building size are described in Section 2.1. These reductions were first presented to the public at the BRA Board hearing of November 30, 1989. It is the understanding of the proponent, based upon testimony of the author of this comment at that hearing, that the most recent modifications are a satisfactory response to this concern.

MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

Thomas P. Glynn
General Manager
Transportation Building
Ten Park Plaza
Boston, Massachusetts 02116

CG

November 17, 1989

Secretary John DeVillars
Executive Office of Environmental Affairs
100 Cambridge Street, 20th Floor
Boston, Massachusetts 02202

LATE COMMENT

RECEIVED
NOV 22 1989
MEPA

Attention: Ms. Connie Gatek
MEPA Unit

RE: EOEA File No. 7643
Olmstead Plaza Draft EIR
Boston, MA

Dear Secretary DeVillars:

The Massachusetts Bay Transportation Authority (MBTA) has reviewed the Draft Environmental Impact Report (DEIR) for the Olmstead Plaza Project and is enthusiastic about the future of this development. However, the proposed development appears to have significant impacts on MBTA operations which need to be addressed more completely.

I have included with this letter, an attachment which details concerns we have regarding the analysis and the projects impacts on the MBTA.

① Of particular concern are increased operating requirements caused by the project. Operating requirements are dictated by passenger volumes at the peak load point on a given route during the peak period of operation. This analysis was not performed for bus routes serving the project site making it impossible to estimate the impacts on transit operations. The report does, however, indicate that increased use of the Green Line resulting from the project will require operation of trains averaging 2.3 cars in length. According to our analysis, the added cost of equipment to accommodate this service level is an estimated $7.5 million with an added annual operating cost of $1.0 million. ②

While we encourage the project proponents strategy to promote the use of mass transportation, in light of the magnitude of the impact on the MBTA and limitations on public financing, the project proponent should assume responsibility for significant mitigation of project impacts on the transit system.

As a practical matter, mitigation might be most appropriate in the form of "adopting Fenway Station." Adopting the station would consist of station modernization and construction of a turn back track as discussed in the proponents Draft EIR and station maintenance. Construction would include:

- access for handicapped persons
- grade separated pedestrian access to the outbound platform
- a turn back track
- new passenger platforms
- lighting, signing, fencing, benches, landscaping, etc.

I further suggest that the project proponent revise his analyses in accordance with the attachment to this letter.

I hope these comments prove helpful. Please contact Mr. Donald J. Kidston, Project Manager for Development at 722-3152 if you have any questions regarding these comments.

Sincerely,

Thomas P. Glynn
General Manager

November 2, 1989

MBTA Comments on Olmsted Plaza DPIR/DEIR

The Olmsted Plaza Draft Project Impact Report and Draft Environmental Impact Report (DRIP/DEIR) contains discussions of current MBTA service near the site (the former Sears Building), and the expected impact of the development on MBTA service and other transportation modes. While it is not the role of the MBTA to comment on the overall DPIR/DEIR, the MBTA has reviewed the sections related to transportation in general and MBTA service in particular. This review has indicated several inaccurate sections that should be addressed and modified as part of the ongoing public review process.

The deficiencies in the DPIR/DEIR can be grouped into four general categories - factual errors, questionable assumptions, misleading analysis, and proposed actions without commitment. The specific examples of these deficiencies are described below. The first three categories can be corrected fairly easily within the report document. However, the fourth category (proposed actions without commitment) is more problematic. Therefore, it will be discussed first.

Proposed Actions Without Commitment

Several references are made to actions that could or should be taken as part of the transportation program to improve access to the development. Many of these "proposals" require added MBTA service, but no reference is made to the additional cost these will impose on the MBTA (as well as the City of Boston and the State, which fund part of the MBTA´s costs). While several of the proposed actions may be appropriate, it is unrealistic to expect that major increases in service can be assured given the constraints on MBTA (and State/local) resources. Instead, it may be appropriate for the development to provide direct funding for some of the proposed improvements. For example, the proposed upgrading of Fenway Park Station could be funded by the development, under the "adopt-a-station" concept. This would also underscore the commitment of the developers to public transit, which is so essential to the project´s success. Such a direct commitment is not included in the DPIR/DEIR.

One additional action recommended in the DPIR/DEIR as a possible MBTA action that should be considered for direct contribution from the developer is the turnback facility at the Fenway Park station. Because this is a facility in proximity to the development providing direct benefits to the site, it would be appropriate for the development to contribute to its funding.

Other proposed MBTA actions could not be funded as directly, but their costs should be acknowledged. For example, the report proposes an increase in the number of 3-car Green Line trains. This may sound like a simple change, but it would be very costly. Additional cars would have to be purchased and maintained, power costs would increase, and an additional operator would be required for each car added. Using unit cost data from a recent study, the capital ocst of purchasing additional Green Line equipment would be about $1.5 million per car (including spares). The operating cost of adding a third car to peak hour trains ④ would be about $200,000 per car per year. To bring the average car length from 2 cars to 2.3 cars on the Riverside Branch alone would require 5 additional cars, resulting in additional costs to the MBTA of $7.5 million in capital funds and $1 million per year in operating funds.

Factual Errors

The descriptions of current transit service includes several small errors. No particular error is significant by itself, but the cumulative effect may give an inaccurate picture of existing service.

The description of rapid transit service to the site included the Orange Line and Red Line. The nearest Orange Line station (Ruggles) is about one mile away. Ruggles would provide very limited direct access to the site, since virtually all passengers would transfer to a bus to travel this distance. The nearest Red Line station is about two miles away (it is actually Central Square in Cambridge, not Park Street). Clearly, the Red Line does not serve the site except through transfers to the Green Line or buses.

The commuter rail line that is in "close proximity" to the site is the Framingham Line, not the Needham Line. As noted in Chapter 10, Yawkey Station is near the site but trains currently stop at the station only for Red Sox games. No mention is made of Yawkey Station in Chapter 3. Also, trains on the other South Side Commuter Lines have a stop at Ruggles, which is a short bus ride from the site.

The description of bus service does not include Route #47A, a key route serving the area. This route provides service every 5 minutes in the peak periods from Brookline Avenue and Park Drive to Ruggles Station, with half of these trips continuing on to Boston City Hospital. It is a short-turn version of Route #47, providing extra service to the most heavily travelled portion of the route. The description of Route #47 also states that Dudley Square is the termination point of 15 bus routes. Since the opening of the Orange Line Southwest Corridor in 1987, many routes that terminated at Dudley were extended to Ruggles, so both Ruggles and Dudley should be described as major transfer points.

The description of the Green Line includes reference to "published" headways and deviations from schedule. The headways noted on published schedules are in the form "every X minutes or less". They should not be interpreted as average headways, but as maximum scheduled headways for that time period. Also, a statement is made that all four Green Line branches operate between Copley and Lechmere. Only the E Line operates to Lechmere; the C line terminates at North Station and the B and D lines terminate at Government Center.

In the description of the transit service, MASCO is described as a "quasi-public" operator providing bus service to the area. It should be noted in the DPIR/DEIR that the MASCO routes are not available to the general public. If Olmsted Plaza chooses to join MASCO and contribute funds to its operation, its employees may use these bus routes. However, later references note that the development's possible participation in MASCO is still under investigation. (9)

Questionable Assumptions

Several assumptions are made in the transportation analysis that tend to show higher expected transit use and lower increases in auto traffic. We agree that the project should strive to attain high transit use, but this cannot simply be assumed. Certain critical assumptions need to be explained or justified in more detail in the report. The main assumptions relate to the expected auto/transit mode split. As a starting point to provide an estimated mode split, the existing mode split of two nearby zones in the Longwood Medical Area is assumed to apply to the project site. The two zones chosen are extremely well-served by transit and show a mode split of 56% auto and 44% transit/walk. It is not clear why the project site (which is in a different zone and is served by different routes) would be expected to have as low a percentage of auto trips. Perhaps the mode split of the zone that includes Kenmore Square as well as the site's own zone (zones 95 and 96) should be referenced to provide a basis for comparison. (10)

Then, an even lower percentage of auto use is assumed for certain types of employees, and for many non-work trips. Using data from DPIR/DEIR Tables 3.4-1 and 3.11-14 (which show estimates of total person trips and transit trips), the overall peak hour auto mode split can be calculated to be about 41% -- significantly lower than the 56% observed at two nearby zones noteworthy for their low auto use. (It is unclear why the total person trips shown is Table 3.4-1 is approximately 25% less than the sum of the columns, but using the numbers in the tables produces this estimate of projected mode split.)

The end of Section 3.11 describes actions that are proposed to encourage transit use and reduce auto travel. The conclusion is that promotional efforts can reduce auto use and parking requirements by an additional 10%. Given the high level of transit use already assumed, it seems very optimistic to expect a reduction of that magnitude. The promotional program would be very important in bringing auto use down to the level initially assumed. (11)

Misleading Analysis

The DPIR/DEIR describes detailed analyses of Green Line and bus route capacity, then notes that the analyses are not at the critical link. It is not clear why these studies are presented in the DPIR/DEIR at all, since they provide very little information on available capacity. The tables presented as part of these analyses could easily mislead a reader who does not understand their limitations. (12)

Regarding Green Line capacity, the DPIR/DEIR describes a detailed analysis conducted at Fenway Park Station. The analysis covers over 5 pages (including 4 tables) and appears to show that because trains arrive at Fenway Park Stations at less then capacity load, additional ridership from the development will not overload the line. At the end of this analysis, it is noted that Fenway Park is not necessarily the "bottleneck" Station on the line. Based on data presented later, it is clear that Fenway Park is not the "bottleneck". The analysis of capacity at a point that is not the "bottleneck" (which is usually referred to as the "maximum load point" in the transit industry) is really of no value in evaluating a line´s capacity. It is easy to imagine outbound Green Line trains with excess capacity at Fenway Park in the morning, but these trains could be very overcrowded at Park Street. The DPIR/DEIR briefly analyzes capacity at the maximum load point by referencing a study done for the redevelopment of the Prudential Center, but does not provide nearly the same level of detail as it does for the incorrect location.

The analysis of bus service suffers from the same methodological error -- none of the capacity analysis is done at the maximum load point. Again, several pages and tables are devoted to showing how much capacity is available on buses in the vicinity of the project site, even though these same buses may be very full at other points on the route "upstream" from the site and there may not be room for additional riders. It should also be pointed out that this bus capacity analysis (as well as the Green Line analysis) is based on observations made during the summer. These routes normally have very high student ridership, so the analysis of capacity based on August counts adds another misleading element. After the long analysis, it is finally noted in a brief sentence that the demand assessment was conducted at stops that "may not necessarily be the critical link on the route." The bus capacity analysis is so misleading that it should be removed from the document.

In the description of future levels of demand, it is estimated that by 1995, the eastbound Green Line will be operating at 111% of capacity. One method suggested by the DPIR/DEIR for dealing with this problem is to improve Green Line schedule adherence. This improvement is an important goal of the MBTA, and steps are being taken to carry it out. For example, the MBTA is installing a vehicle identification system that will assist in the dispatching of vehicles at regular intervals. However, it should be acknowledged that schedule adherence is a very difficult problem for a line with the characteristics of the Green Line. The Green Line experiences delays from surface operation mixing with street traffic (similar to a bus), but because it is a rail operation, vehicles cannot pass each other and any one delay can have an effect on many trains. In any case, it is quite misleading to imply that improved schedule adherence can move a line from over capacity to under capacity. The estimate of demand at 111% of capacity means that even if trains and passengers arrive at uniform rates, each train would still be 11% over its capacity. If there is any disruption in service or irregular arrivals, certain trains would be even more overcrowded.

The DPIR/DEIR's reference to Green Line capacity should also recognize the "effective" capacity of a line with the Green Line's characteristics. The Green Line serves both the trip collection and line-haul functions of transit, while providing a single-seat ride to many passengers. By providing the functionality of both a rail and a bus system, the service must deal with the difficulties noted in the discussion of operations. Thus, improvements in reliability can be made up to a certain level, but absolute regularity in service is not theoretically possible. It would be possible and more informative to estimate an "effective capacity" at some lower level than total scheduled capacity. The effective capacity would be based on an estimate of maximum achievable reliability. ⑯

MBTA 1

The public bus routes study was focused on determining the quality of service provided by the bus lines, including the service frequency and the demand, at the project site. Technically, the transit capacity study should be performed at the bottleneck segment of its route (the highest demand station); however, bus line capacity analysis was not suggested in either the MEPA or BRA scoping. Accordingly, it was not in the study objective.

MBTA 2

In response to this letter the project proponent met with Mr. Kidston and several members of the MBTA staff. Means for addressing the concerns expressed in the letter were discussed in some detail. It was concluded that the major concerns fall into two distinct categories: the need to improve carrying capacity on the Green Line, and the need to undertake improvements to the Fenway Park Station. The MBTA staff indicated that it felt the efforts of Olmsted Plaza to mitigate demands on MBTA should focus upon the latter category since MBTA is already working toward the broader improvements needed to increase the carrying capacity of the Green Line.

The MBTA programs to increase capacity are two-fold. First, efforts are underway to increase operating efficiency. These efforts include an automatic vehicle identification system for the Green Line. Descriptions of this new system are included in Appendix II. Second, MBTA has acknowledged the need to add rolling stock to the Green Line. They agree that increasing the average train length will provide substantial improvements in carrying capacity. The needs for new equipment have been identified, and efforts to establish funding for the required purchases are underway. Given the general lack of State funds, however, MBTA feels that no firm timetable for placing new stock into service is realistically possible at this time.

MBTA 3

In the meetings, the MBTA reiterated its request that Olmsted Plaza "adopt Fenway Station". The developer has agreed, in principle, to do this. The staff of MBTA has provided the developer with a conceptual design of a system of improvements it would like to have sponsored by the proponent. Jointly the proponent and MBTA will review the conceptual design, and amend it to meet the needs of both parties. Upon revising the design to meet both technical needs and budget limitations, it will be implemented. The developer has specifically acknowledged that it will underwrite up to $250,000 in station improvement costs. Olmsted Plaza Associates has also agreed to maintain the adopted station for 50 years. Both parties agree that mutually acceptable station improvements will be completed prior to the opening of either of the phase two buildings.

As a point of clarification it should be noted that the recommendation to increase average train length is not solely a function of demands generated by Olmsted Plaza. Several new projects are coming on line and each contributes to demands on the Green Line. There will be a service capacity deficiency on the line with or without Olmsted Plaza.

A letter from MBTA confirming the ongoing dialogue, and the commitment to move forward with mutually acceptable improvements is included in Appendix VI.

MBTA 4

It should be noted that the recommended increase in the average number of cars per train during the peak hour is in response to the projected demand at the Green Line bottleneck between Copley and Arlington Station, not just the Riverside Line. The projected demand is a result of eighteen proposed developments in the area, besides Olmsted Plaza. The emphasis on the capital cost required for additional equipment should take this into account. Also, the additional service will generate added revenues that can be earmarked to recover the cost of additional equipment. The proposed automatic vehicle identification system for the Green Line is included in Appendix II..

MBTA 5

The transit study focuses on the last mode of transit used to reach the site. The Green Line and buses are the primary sources of mass transit to the site.

MBTA 6

Per conversations with the Commuter Rail staff, Yawkey Station is not feasible for regularly scheduled services, especially during peak hours. This is mainly due to the minimum headway requirements in the service schedule. It is our understanding that regular stops at this station would create headway disruptions for this line and potential safety hazards. Also see responses to comments 5 and 9.

MBTA 7

While Bus Route 47 ws surveyed at the stops in front of the site, the service frequency observations included both Route 47 and Route 47A. No distinction was made. The authors acknowledge that both Dudley and Ruggles are major transfer points.

MBTA 8

This clarification of headway definition is noted. Likewise the clarification of E Line Service is acknowledged.

MBTA 9

Olmsted Plaza Associates has committed to coordinate with MASCO to expand MASCO bus service to Ruggles Station and Harvard Square, which should reduce the site demand to the nearby Green Line transit system.

MBTA 10

The mode split assumptions were those provided by the Boston Transportation Department. Note that the afgreement in Appendix VI require the developer to work aggressively toward meeting these made splits.

MBTA 11

The mitigation strategy recommended in the DPIR/DEIR, designed to pursue a 10 percent reduction in auto use, was based on the nationwide transportation mitigation experiences documented by the U.S. Department of Transportation, "Traffic Mitigation Reference Guide", published in December, 1984. The authors agree that it is a very aggressive goal.

MBTA 12

As outlined in the DPIR/DEIR, the public transit studies at the project site were performed to determine the quality of service provided by the Green Line and the adjacent bus routes. This information is provided to concerned agencies to evaluate appropriate mitigation strategies in improving transit service surrounding the project site. The transit analysis is quite explicit in noting that the bottleneck section is further east, but the authors agree that the bus analysis could be misleading.

MBTA 13

Again, the Green Line study at Fenway Park Station was undertaken in an effort to determine the quality of service at the project site. Many studies at the Green Line bottleneck segment between Copley and Arlington Station have been conducted by other consultants in the past few years. These study results have provided adequate information on Green Line performance. Therefore, it was not necessary to repeat the same study to pursue the same results. The emphasis should be on the mitigation strategies to improve capacity. This was documented in the DPIR/DEIR, and supplemental information can be found in Section 3.5 and Appendix II of this report.

MBTA 14

The concerns in this comment were also raised by other commenters. Olmsted Plaza Associates has committed to coordinate with MASCo to expand the shuttle bus service in the area, which will relieve the site demand to the public bus routes. Please see correspondence in Appendix VI.

MBTA 15

Each of these observations on Green Line operation are acknowledged. The project sponsors and their consultants fully agree that significantly improving service on the Green Line is an extremely challenging task given its operating characteristics.

MBTA 16

The authors agree with this comment.

**Boston Water and
Sewer Commission**

425 Summer Street
Boston MA [illegible]
617-330-9400
Fax 617-330-[illegible]

RECEIVED
NOV 14 1989
MEPA

November 9, 1989

Secretary Mr. John P. DeVillars
Executive Office of Environmental Affairs
20th Floor
100 Cambridge Street
Boston, Massachusetts 02202

Attention: MEPA Unit

Re: EOEA #7643, Olmsted Plaza, DEIR

Dear Secretary DeVillars:

The Boston Water and Sewer Commission has reviewed the Draft Environmental Impact Report for the proposed Olmsted Plaza project. This project consists of the redevelopment of the existing and presently vacant Sears Building on Brookline Avenue, Boston and the construction of three new buildings; an office building, a 300-room hotel or office building and a garage.

The gross floor area of the proposed project (excluding the garage) totals 1,557,000 square feet of retail, office, clinical, and research and development space and will include day care facilities, a hotel and an athletic club. The garage will have capacity for 1525 cars. The Sears parking lot across from the proposed development on Park Drive is to be purchased by the developer, tranfered to the city and then restored as parkland.

Phase I of the project will involve the demolition of the warehouse additions, restoration of the main Sears Building, and construction of the garage up to the fifth floor. The second phase of the project will entail the development of the buildings on Park Drive and on Brookline Avenue and the addition of three new levels of parking to the garage.

Average daily water use at the proposed facility is projected to be about 144,760 gallons per day (gpd) or about 78,760 gallons more than previously used. Peak summer use will increase by about 152,560 gpd for a total of about 218,560 gpd. Wastewater flow will increase by about 93,680 gpd.

In order to fully evaluate the potential impacts of the proposed project the Commission requests that the following concerns be addressed in the Final Environmental Impact Report:

1. Figure 7.2-1 needs revision. The 48 inch water main on Brookline Avenue is owned by the Commission, not by the MWRA as indicated on the plan. Also, the Commission has a 48 inch water main on Longwood Avenue and on Beacon Street which should be shown.

2. A new fire flow test should be conducted for Brookline Avenu since the data submitted by the proponent is somewhat dated (1986). The proponent may contact the Engineering Services Division to arrange for a new fire flow test.

3. Plans should be provided which show the locations of the existing water, sewer and storm drain connections and the propose locations. The services to be abandoned should be indicated.

4. An estimate of water required for landscape purposes at the Olmsted Plaza project site should be provided.

5. Water conservation measures to be employed indoors and out should be identified. Low flow toilets (1.6 gallons per flush) are required under the State Plumbing Code. Conservation measure such as low water use plantings and irrigation controls should be considered.

6. The Commission owns two 72 inch storm drains and one 24 inch sanitary sewer which run through the Emerald Necklace site. Plan to restore the park on the site should be reviewed by the Commission prior to construction.

7. Grease traps will be required in the garage.

8. The Commission's Infiltration and Inflow (I/I) program focuses on areas where excessive I/I has been identified through flow gaging. Based on an I/I Analysis completed a few years ago we have determined that the proposed project is not located in a high priority area. Therefore, no recommendations for further field work or sewer system rehabilitation in the vicinity of the proposed project is scheduled at this time.

9. The proponent should indicate whether steam condensate from the 3 boilers (mentioned on page 7-18) will be recirculated or will it be discharged to the sewer system. If condensate is to b discharged to the sewer, then an estimate should be provided

10. On page 4-60 of the DEIR it states that the entire length of the Muddy River is considered Class C water under the Massachusetts Surface Water Quality Standards. The Department of Environmental Protection is currently considering changing the classification of the Muddy River to Class B water. The proponen should note this in the DEIR.

The proponent is advised to consult with the Commission in the event that future development at the Van Ness site and the Peterborough site will effect the Commission's water or sewer systems.

Thank you for the opportunity to comment on this project.

Yours truly,

John P. Sullivan, Jr. P.E.
Chief Engineer

cc: P. Lee, Olmsted Plaza Associates
S. McCandless, HMM Associates
D. Klabin, BRA
R. Mertens, BRA
S. Shea, BWSC

A/KEITH*/OLMSTED

BWSC 1

Figure 7.2-1 has been revised as indicated and is attached.

BWSC 2

A new fire flow test, if necessary, will be coordinated with the BWSC for the Brookline Avenue SLS water main near Park Drive.

BWSC 3

A Utility Plan for the site is included in the map pocket at the end of this report.

BWSC 4

Water usage for landscaping purposes is uncertain at this time. However, xeroscaping will be utilized to the extent that drought resistant plantings, alternative ground covers will be considered.

BWSC 5

Water conservation measures to be utilized include low flow toilets and automatic shut off faucets. In addition, drought resistant plantings, irrigation controls, and water absorbing polymer soil additives will be considered.

BWSC 6

As plans for the Emerald Necklace Park are developed, utility owners will be given the opportunity of review and comment prior to construction.

BWSC 7

Where necessary to satisfy BWSC, gas/oil separators will be provided.

BWSC 8

The project MEP Engineer has indicated that steam condensate will be recirculated to the boilers.

BWSC 9

This information is appreciated and taken under advisement.

C6

MASSACHUSETTS WATER RESOURCES AUTHORITY
Charlestown Navy Yard
100 First Avenue
Boston, Massachusetts 02129

Telephone
(617) 242-600

Board of Directors
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Executive Director
Paul F. Levy

November 14, 1989

RECEIVED
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MEPA

John P. DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Attn: MEPA Unit

Re: EOEA No. 7643 - Olmsted Plaza DEIR, Boston

Dear Secretary DeVillars:

Concerning the above-referenced Draft Environmental Impact Report (DEIR), we submit the following comments:

The proposed project will significantly increase wastewater flows to the Boston and MWRA Sewer Systems, and the Deer Island Wastewater Treatment Facility, which currently lack sufficient capacity to convey and treat wastewater flows without chronic surcharging and over flowing, especially during wet weather. While the increase in wastewater flow of approximately 93,680 gpd does not seem significant compared with the total flow to Deer Island, the cumulative flow from several new projects being constructed simultaneously is significant. All proponents of new projects are encouraged to minimize the flows from their projects.

The proponent has proposed certain water conservation measures to be implemented in the new facilities. In addition, the following should be included:

o Heating and Cooling
The building heating and air conditioning should be air cooled rather than water cooled. Where water cooling is necessary the system should be closed loop. ①

- Landscaping ②
  Landscaping should emphasize the use of water efficient plantings, and minimize turf areas.

- Laundry ③
  Water efficient equipment should be used.

The proposed project will require MWRA-approved gas/oil separators for the garage structure. The future tenants of the site may need to secure Sewer Use ④ Discharge Permits if they intend to discharge any industrial process wastewaters. In addition, industrial processes should use water saving techniques.

We appreciate the opportunity to comment. Should you have any questions, please do not hesitate to call me at 242-0230, ext. 4804.

Very truly yours,

Katina N. Belezos,
Project Engineer
Planning Program
Wastewater Engineering

KNB/gmc:450

MWRA 1

The project MEP has indicated that Olmsted Plaza HVAC systems will be called through a closed loop water system.

MWRA 2

The landscape architect is aware of the importance of water conservation and will be specifying efficient plantings as well as limiting turf areas. A water efficient irrigation system will be researched.

MWRA 3

No central laundry facility is currently programmed. Tenants will be encouraged to use water efficient equipment should localized facilities be installed.

MWRA 4

Where necessary MWRA approved gas/oil separators will be specified. It is uncertain at this time whether intended future uses would be regulated as "industrial process wastewaters," as such, the need for a Sewer Use Discharge permit will be evaluated on a case-by-case basis.

APPENDICES

LIST OF APPENDICES

I BRA PRELIMINARY ADEQUACY DETERMINATION
II TRANSPORTATION APPENDIX
III HOUSING IMPACT REPORT
IV EMPLOYMENT IMPACT ANALYSIS
V MISCELLANEOUS
VI COOPERATION AGREEMENT, TRANSPORTATION ACCESS PLAN AGREEMENT AND RELATED CORRESPONDENCE
VII ORDER OF CONDITIONS

APPENDIX I

BRA PRELIMINARY ADEQUACY DETERMINATION

December 21, 1989

Messrs. R. K. Umscheid and Byron Gilchrest
Olmsted Plaza Associates
c/o JMB/Urban Development Co.
Four Copley Place
Suite 600
Boston, MA 02116-6501

Dear Messrs. Umscheid and Gilchrest:

RE: OLMSTED PLAZA

This letter is the Preliminary Adequacy Determination (the "Determination") of the Boston Redevelopment Authority (the "BRA") with respect to the Draft Project Impact Report (the "DPIR") for your proposed Olmsted Plaza project (the "Project"), which you submitted to the BRA on September 29, 1989 and which was noticed to the public on October 3, 1989.

The BRA is issuing this Determination pursuant to Section 31-5 of the Boston Zoning Code (the "Code"). This Determination requests information required by the BRA for its review of the Project in connection with Development Review pursuant to Article 31 of the Code. To date, Development Review is not yet complete despite the actions taken by the BRA Board, Zoning Commission, Board of Appeal, Conservation Commission, and Public Facilities Commission, which are described below.

On November 30, 1989 the BRA Board approved the following documents submitted for the Project:

a) Development Impact Project Plan pursuant to Article 26A of the Code;

b) Development Impact Project Agreement including Provisions for the Jobs Contribution Grant pursuant to Articles 26A and 26B of the Code;

c) Development Plan pursuant to Section 3-1A.a of the Code;

d) Cooperation Agreement pursuant to Section 31-14 of the Code; and

e) Resolutions of the Boston Redevelopment Authority Regarding the Olmsted Plaza Development Plan and Development Impact Project Plan.

On December 13, 1989 the Boston Zoning Commission approved Map Amendment No. 234 and the Development Plan for Planned Development Area No. 36. On December 14, 1989 the Mayor signed Map Amendment No. 234, thereby making it effective as of December 14. On December 14, the Boston Conservation Commission reviewed the Notice of Intent dated December 10, 1989 and on December 15, 1989 issued the Order of Conditions permitting the Project to proceed subject to the special conditions stated therein. On December 19, 1989 the Board of Appeal approved the application for (1) exceptions from provisions of the Code for various elements of the 8.9 acre site of the existing Sears Building, and (2) variances and conditional use permits for the three ancillary parcels. On December 21, 1989 the Public Facilities Commission approved the acceptance of a deed from Sears, Roebuck and Co. for the parking lot in the traffic circle -- the "Missing LInk" parcel as described in the DPIR -- and approved the transfer of the parcel to the Boston Parks and Recreation Department subject to a parking lot lease between Sears, Roebuck and Co. and MASCO.

PREAMBLE

The BRA is reviewing the Project pursuant to multiple sections of the Code. The BRA and Proponent have mutually agreed that the Project is subject to BRA review and approval pursuant to Article 31 of the Code, Development Review Requirements, which sets out a comprehensive procedure for project review, and requires the BRA to review the design, transportation, environmental, and other impacts of proposed projects. Article 31 requires the issuance of a final Adequacy Determination prior to the issuance of a building permit. The final Adequacy Determination is issued upon the determination by the BRA that the Final Project Impact Report ("FPIR") is satisfactory.

In addition, the Project requires zoning relief for the creation of a Planned Development Area (PDA) at the site of the existing Sears Building pursuant to Section 3-1A.a of the Code. The substantive review requirements imparted by this section address related, but not identical, issues which are the basis of the Article 31 review. The reviews, however, overlap to a significant degree. Therefore, the BRA is incorporating its review of zoning relief for the Project into the Article 31 process to eliminate regulatory duplication and consolidate the Project's review into one process and one set of documents.

In general, PDAs are permitted in order to encourage large-scale development on underutilized sites, while insuring quality design through strict design guidelines and environmental impact standards. Pursuant to Article 3, projects within PDAs are required to meet at least one (1) of the following objectives: provide for diversification and expansion of Boston's economy in new areas of economic activity; provide public benefits; or provide for the creation or retention of job opportunities. The Project provides an opportunity to achieve all three objectives and is located in an area in which PDAs are permitted. In addition, no Development Plan for a PDA shall be approved by the BRA unless the BRA finds that such plan "conforms to the general plan for the city as a whole and that nothing in such plan will be injurious to the neighborhood or otherwise detrimental to the public welfare." On October 24, 1989, and as supplemented on November 9, 1989, Olmsted Plaza Associates submitted to the BRA an application letter for designation of the 8.9 acre site as Planned Development Area No. 36. As set forth in the Resolutions approved by the BRA Board on November 30, 1989, the Development Plan for Olmsted Plaza satisfies these requirements. The PDA application was heard and approved by the Zoning Commission on December 13, 1989 and signed by the Mayor on December 14, 1989.

The BRA is coordinating its Development Review of the Project with the requirements of the Massachusetts Environmental Policy Act ("MEPA") pursuant to Section 31-13 of the Code. The BRA's analysis of the DPIR has considered (1) written comments received during the 30-day MEPA comment period, (2) written comments received during the 30-day DPIR comment period (see Appendix I), and (3) verbal comments made at the community meetings and public hearings during the period from September 28, 1989 to December 14, 1989.

ARTICLE 31 - DEVELOPMENT REVIEW REQUIREMENTS

On June 28, 1989, Olmsted Plaza Associates ("the Proponent") submitted to the BRA a Project Notification Form, for which the BRA responded with a Scoping Determination (the "scoping") on September 28, 1989. On September 29, 1989, the Proponent submitted to the BRA a DPIR for the Project. This Determination is issued in response to the DPIR. On November 16, 1989, the BRA Board held a public hearing with regard to the Project. On November 30, 1989, the public hearing was continued, and the BRA Board voted to approve the Development Plan and the Development Impact Project Plan for the Project, subject to the incorporation of mitigation measures in the final plans. These measures have been reviewed in collaboration with city and state agencies, technical consultants, and neighborhood residents. This Determination requests information necessary to finalize such measures.

SECTION 31-5.4: PRELIMINARY ADEQUACY DETERMINATION

In its review of the DPIR, the BRA has identified certain components which are insufficient and which you must modify, and additional information which the BRA requires in order to issue a final Adequacy Determination. The following is a description of the sufficiency of the materials submitted in the DPIR, and the specific additional materials which you must include in the FPIR.

I. PUBLIC BENEFITS

The DPIR outlines a wide range of public benefits -- affordable housing, jobs creation, jobs training, child care, new parkland, a comprehensive areawide transportation study, and funding for transportation improvements. The PDA approval process requires the provision of public benefits and mitigation measures sufficient to outweigh any burdens created by the Project. This specific benefit/burden weighing test was an important component in the decision of the BRA Board to approve a PDA for the Project. A description of the specific public benefits package that evolved from the culmination of community discussions must be included in the FPIR. The final drafts of the housing impact study and the employment impact study must also be included in the FPIR.

II. TRANSPORTATION COMPONENT

The Transportation Component indicates traffic impacts created by the Project which exert a burden on the adjacent areas. Of all the Project impacts, the traffic impacts are perhaps the most burdensome to the residential neighborhoods. It is apparent that measures must be undertaken to ease the traffic conflicts on the local streets.

The DPIR recommended several optional mitigation approaches: meter removal on Brookline Avenue; circulation changes along the Riverway, Brookline Avenue and Boylston Street; signal timing alterations; Sears Circle reconfigurations; and other minor engineering roadway improvements, among others. It is not solely the responsibility of the Project to implement these measures, but the Project can make considerable contribution toward insuring that these opportunities are realized, and to the extent the measures would mitigate Project-related traffic, the Proponent is to provide funding support for them. These measures have been discussed extensively with the BTD, the MDC, and the community. The FPIR must present the current mitigation approach and its associated costs and impacts. The FPIR must also summarize the public benefits to be generated by the following transportation improvements: (1) the funding to be contributed by the Proponent to implement various traffic and transit improvements in the area during Phase I and afterwards, (2) the preparation of a comprehensive areawide transportation study, (3) the annual monitoring after completion of Phase I, and (4) the preparation of an updated Transportation Impact and Access Plan for each future phase.

The following comments indicate concerns which were raised during community meetings and which have been addressed in our review of the Project. The resolution of these issues must be documented in the FPIR.

A. Traffic Management Element

Concern has been raised about the adequacy of the traffic counts described in the DPIR. The FPIR must clarify (1) what time of year the counts were made, and (2) the effect of the calendar timing on the results. The results should be evaluated in light of area studies recently completed, e.g., the Longwood Medical Area Transportation Study prepared by Vanasse Hangen Brustlin, Inc. (VHB).

The intersection Level of Service ("LOS") analysis submitted in the DPIR complied with the scoping, but it was requested that the study area be expanded to include the intersection of Boylston Street and Ipswich Street. The Proponent must present his findings and propose feasible mitigation measures to improve the LOS, if necessary.

Review of the DPIR focussed on the following circulation scenarios for Sears Circle: (a) Existing Conditions, (b) No Build, (c) a Base Build with No Improvements, (d) Build with a 5-lane Brookline Avenue and individualized intersection improvements, (e) Build with the "pure rotary" design (including individualized intersection improvements and the 5-lane Brookline Avenue), and (f) Build with a short one-way couplet design for Riverway and Brookline Avenue. At minimum, these six scenarios must be documented in the FPIR. All "build" configurations should assume traffic patterns consistent with the split garage concept described below in the Parking Management Element section of this letter.

The FPIR must also document the Meter Removal mitigation plan along Brookline Avenue. The number and location of meters to be removed should be outlined as well as Build Year operations analysis at intersections on Brookline Avenue. A cost estimate for the funding of the meter removal and subsequent pavement striping should be included also in the FPIR.

The status of the consideration of the proposed connector roadway between Fullerton Street and Maitland Street must be included in the FPIR. The description should address the issues of required land takings, timing, and conceptual cost estimate. The proposed widening of Fullerton Street and the connection with Miner Street should be described also in the FPIR.

An overview discussion of the one-way couplets should be provided in the FPIR, addressing the issues of feasibility, relative advantages and disadvantages, and time frames. In addition, the Proponent should address points raised concerning trip generation and intersection analysis in the comment letters from KAFNI, MASCO, and others.

Several members of the community have expressed concern about the pedestrian crossing on Park Drive at the MBTA overpass. The FPIR must describe current recommendations for improving this situation.

A map and statement of costs for the proposed Phase I transportation mitigation measures should be prepared and submitted to BTD.

An additional public benefit of the Project will be the contribution of funds for the preparation of a comprehensive areawide transportation study. The analyses and additional information prepared for the FPIR should be contributed also to this study to be prepared by others.

B. Parking Management Element

The proposed single-building parking facility at the rear of the site as described in the DPIR was reanalyzed in response to community concerns about massing and traffic. Given the proximity of the ancillary parcel at Van Ness and Jersey Streets, a split parking garage concept was developed, which allocated up to 1,155 parking spaces in the parking facility at the Sears Building site and up to 440-500 parking spaces in the parking facility at the Van Ness site. The FPIR must include a description of the analysis which was done to identify how the split parking might help decrease congestion at key study area intersections, including decreasing on-site queuing that may result in unacceptable conditions at the vehicular entrances/exits to the main site and along the proposed roadway between Park Drive and Fullerton Street.

A clear description of mitigation strategies to encourage transit use should be outlined. Reference should be made to consultations with MASCO personnel regarding joint transportation plans, carpooling, and vanpooling.

The FPIR must also provide sample floor plans for the proposed parking facilities. Internal circulation and the number of spaces should be indicated.

C. Construction Traffic Management Element

The DPIR describes the phases of the redevelopment indicating the truck routes and a brief discussion of pedestrian access. The Traffic Maintenance Plan to be submitted to the BTD must include the submission of an interim site plan indicating how pedestrian access will be maintained throughout the site during the entire period of the redevelopment and illustrating the quality of those pedestrian routes.

D. Monitoring Element

As established in discussions with BTD, an updated Transportation Impact and Access Plan is to be prepared for each future phase of the Project. The FPIR must include copies of the Cooperation Agreement and the Transportation Access Plan Agreement, which establish the City's positions regarding (1) identifiable performance goals, (2) an annual monitoring program, which would identify traffic generation produced by the actual uses and would evaluate the achievement of the project goals, and (3) adjustments of the mitigation plan in response to the monitoring results.

E. Pedestrian Circulation

As part of the circulation changes proposed, the FPIR should clearly identify the provisions established for improved pedestrian circulation. This would include identification of principal pedestrian circulation routes, signal timing to accommodate pedestrian circulation, and any improvements such as traffic islands which will facilitate pedestrian movement.

III. ENVIRONMENTAL PROTECTION COMPONENT

The analysis of impacts for each of the elements of the Environmental Protection Component submitted in the DPIR is sufficient to satisfy the scoping requirements, but for the following information which must be included in the FPIR:

A. Solid and Hazardous Wastes

1. Updated complete copies of (1) the Chapter 21E site assessment report, and (2) the report of the presence of asbestos must be included in the FPIR. The results of the preliminary site investigation (submitted under separate cover) indicate the presence of high levels of petroleum hydrocarbons in several of the soil samples. The Site Report recommended that additional subsurface

explorations and chemical testing be conducted to determine the extent of petroleum contamination at the site and to evaluate the extent of site remedial measures. The FPIR should indicate the results of these further, more detailed explorations and should indicate whether an application for Waiver of Approvals has been submitted to the Department of Environmental Protection and, if so, whether such waiver has been granted.

2. Although no high-volume manufacturing or chemical processing is to occur on-site, research work will be carried out and may require special drains or other measures to prevent contamination of water resources in the area. Specific requirements should be listed in the FPIR.

3. A draft Solid and Hazardous Wastes Management Plan must be included in the FPIR to address (1) the terms of section 18 in the Cooperation Agreement dated December 13, 1989, (2) the capability of the design and specification of base building systems to filter ducted "fresh air" and ducted exhaust air, and to segregate contaminants from potable water supplies, sanitary waste systems, etc., and (3) the availability and use of licensed, commercial haulers of contaminated wastes. Prior to occupancy of the Project, a final Solid and Hazardous Wastes Management Plan must be prepared in a format suitable for review with the BRA and community groups. This plan must also be reviewed with the Boston Biohazards Committee if any laboratory research will need to use recombinant DNA materials, in which case the appropriate required permit(s) must be obtained from the City of Boston Department of Health and Hospitals.

B. Air Quality

1. The FPIR must address the concern about potential air quality impacts from traffic queuing at the on-site garage.

C. Wetlands/Floodplains

1. Several mitigation measures are proposed; there needs to be a commitment to implementing these measures. In addition, catch basins in the on-site roadway and temporary parking lots, as well as within the on-site parking garage, should be provided with oil/grease separators and sedimentation sumps.

2. Submit copies of the information presented at the Conservation Commission hearing on December 14, 1989 and the information to be presented at the Conservation Commission hearing scheduled for January 16, 1990, together with copies of the Order of Conditions issued by the Conservation Commission. As stated in the letter from Hale and Dorr to the Conservation Commission dated December 6, 1989, after completion of the first phase and after completion of the entire development, flood storage capacity on the site will be in excess of current flood capacity, and thus the anticipated impact of the Project on surrounding areas is not adverse.

D. Geotechnical and Groundwater

1. The discharge of groundwater or porewater into the City's storm drainage system will require a permit from the Boston Water and Sewer Commission (BWSC). The FPIR must include the requirements of the BWSC for this permit.

E. Construction Impacts

1. As evidence of the Applicant's commitment to continue to address the concerns of the Fenway, Audubon Circle, and Kenmore neighborhoods, a copy of the final draft of the Transportation Access Plan Agreement must be included in the FPIR.

   Ms. Nancy Weibust, an area resident, has volunteered to be the contact person for the Kenmore, Audubon Circle, Fenway Neighborhood Initiative (KAFNI); other neighborhood contacts will be determined in the future.

2. In addition, the Applicant must continue to work with the BTD to develop the Construction Component of the Transportation Maintenance Plan (TMP).

F. Rodent Control

1. This section must be included within the body of the FPIR/FEIR document since it was not included in Volume I of the DPIR.

2. The FPIR must describe a schedule of rodent control service visits before, during, and after construction which comply with Commissioner's Bulletin No. 87-4, "Rodent Extermination Requirements for Building Department Permit Applications," issued by William Sommers, Commissioner, Department of Inspectional

Services, dated May 14, 1987 or as amended. In addition, the City's Rodent Control Officer must be consulted as necessary to comply with the latest recommended practices.

IV. INFRASTRUCTURE SYSTEMS COMPONENT

A. The analysis of impacts for each of the elements of the Infrastructure Systems Component submitted in the DPIR is sufficient to satisfy the scoping requirements, but for the following issues which must be addressed in the FPIR:

1. Reference the results of the Applicant's discussions with the various utility companies whose systems will be affected by the Project, and describe what mitigation measures will address each utility.
2. Describe how the Project will connect to and contribute to the proposed separated sewer system in the area.
3. Analyze the office alternative for the Brookline Avenue building eventhough the hotel alternative would have the greater burden, as required by the Scoping Determination.
4. Indicate the size of the Park Drive and Fullerton Street mains.
5. Recalculate the infrastructure requirements based upon any revised square footage area breakdowns for the various principal uses in the renovated Sears Building.
6. Discuss the opportunities for state-of-the-art energy conservation in the design and operation of the proposed mixed-use Project, and describe the strategies for recycling, storage cooling, load shedding, and other measures for conserving the consumption of water, fossil fuel, natural gas and electrical energy.
7. Confirm the presence of oil- or gas-fired boilers in the Sears Building.
8. Describe required modifications to the natural gas system.

9. Show locations of storm water discharges, catch basins, and all other utility connections.

10. Describe telephone, computer cable, and special transmission systems.

11. Describe the potential impacts of severe weather conditions on existing and proposed storm water systems.

12. Respond to the written comments submitted by the Boston Water and Sewer Commission (BWSC) dated November 9, 1989 and included here by reference (see Appendix II).

V. URBAN DESIGN COMPONENT

A. The materials submitted in the Urban Design Component of the DPIR are sufficient to satisfy the scoping requirements, but for the following studies and further information which must be included in the FPIR:

1. Reduce the height of the proposed parking structure to no greater than six stories, with a total capacity of no greater than 1155 spaces, in accordance with the split garage scheme required for the Parking Management Element described above and in accordance with comments received regarding the bulk and massing of this new building adjacent to the Sears Building.

2. Revise the massing of the Park Drive Building in order to mitigate shadow impacts on nearby residential buildings, and reduce the proposed buildout by 12,000 gsf, as shown in the model displayed at the public hearings on November 16, 1989 and November 30, 1989, in order to achieve a more sensitive transition between the bulk of the Sears Building and the nearby residential buildings located west of the site. The approved Development Plan is based upon this revised massing and program for the Park Drive Building.

3. The following materials were requested in the Scoping Determination but have not been received to date and are still necessary for issuance of the final Adequacy Determination. In addition, these materials will be necessary for design review of the future buildings at the Sears site and will aid the community's participation in the

planning and zoning study for the West Boylston area which will be starting soon:

a. Aerial views of the Project

b. Black and white, 8" x 10" photographs of the site and area

c. Sketches and diagrams to clarify planning and design issues and massing options

d. Site sections at an appropriate scale (1" = 100' or larger) showing relationships of the Project to the surrounding area's massing, building heights, and scaling elements (see Appendix III for the location of the site sections)

e. Site sections at 1" = 32' or larger showing relationships to adjacent buildings and spaces

f. Site plans at an appropriate scale (1" = 100' or larger) showing relationships of the Project to the surrounding area's public spaces, and to the pedestrian and vehicular circulation -- biking and jogging paths should also be shown

g. Site plan at 1" = 32' or larger showing pedestrian, handicapped, vehicular and service access and flow through the site, and to and from adjacent areas

h. Elevation drawings in the context of the surrounding area at an appropriate scale (1" = 16' or larger) describing architectural massing, facade design and proposed materials

4. Submission requirements for the Design Development Submission and Contract Documents Submission are as described in Appendix 3 of the Scoping Determination and are incorporated herein by reference.

VI. HISTORIC RESOURCES COMPONENT

A. The information submitted in the DPIR is sufficient to satisfy the scoping requirements in light of the decision on October 20, 1989 by the Board of the Boston

Landmarks Commission to recommend designation of the original sections of the Sears Building -- Sections A through D, built 1928-31 -- as a Landmark. The BRA supported this designation in its testimony at the public hearing in September, 1989.

VII. AGREEMENTS

The agreements and plans listed below must be provided in form and content satisfactory to the appropriate signatory public agencies before the Project can receive final approval by the BRA. These documents are required for the issuance of a building permit for the Project, as set forth in the Resolutions approved by the BRA Board on November 30, 1989.

A. Transportation Access Plan Agreement

B. Traffic Maintenance Plan (TMP) in conformity with the City's Construction Management Program

C. Boston Residents Construction Employment Plan, pursuant to Chapter 12 of the Ordinances of 1986 of the City of Boston, as amended by Chapter 17 of said Ordinances, and Executive Order Extending Boston Residents Job Policy, signed by the Mayor on July 12, 1985

D. First Source Agreement with the Mayor's Office of Jobs and Community Services

E. Child Care Provision Agreement with the Boston Women's Commission

The Cooperation Agreement and Development Impact Project Agreement were approved by the BRA Board on November 30, 1989 and were executed by the Proponent on December 13, 1989.

But for the required corrections, clarifications, and additional information described above, the DPIR submitted is sufficient to satisfy the scoping requirements.

We look forward to reviewing the FPIR/FEIR.

Sincerely,

Pamela Wessling

Pamela Wessling
Assistant Director for Urban Design and Development

Enc: Appendix I -- List of Organizations/Individuals Commenting on the DPIR

Appendix II -- Comments Submitted by the Boston Water and Sewer Commission

Appendix III -- Site Sections

APPENDIX I

LIST OF ORGANIZATIONS/INDIVIDUALS COMMENTING ON THE DPIR

448 Park Drive Condominium Association -- Board of Managers

452 Park Drive Condominium Association -- Board of Managers

Boston-Fenway Program, Inc.

Boston Parks and Recreation Department

Boston Water and Sewer Commission (BWSC)

Charles River Watershed Association

Fenway Community Development Corp. (FCDC)

Friends of the Muddy River

Kenmore, Audubon Circle, Fenway Neighborhood Initiative (KAFNI)

Massachusetts Bay Transportation Authority (MBTA)

Medical Area Service Corporation (MASCO)

Riverway Square Condominium Trust

Wheelock College

Ms. Rachel Edelstein

Ms. Barbara K. McKinley

APPENDIX II

COMMENTS SUBMITTED BY THE BOSTON WATER AND SEWER COMMISSION

Boston Water and
Sewer Commission

425 Summer Street
Boston, MA 02210-1700
617-330-9400
Fax 617-330-5167

November 9, 1989

Secretary Mr. John P. DeVillars
Executive Office of Environmental Affairs
20th Floor
100 Cambridge Street
Boston, Massachusetts 02202

Attention: MEPA Unit

Re: EOEA #7643, Olmsted Plaza, DEIR

Dear Secretary DeVillars:

The Boston Water and Sewer Commission has reviewed the Draft Environmental Impact Report for the proposed Olmsted Plaza project. This project consists of the redevelopment of the existing and presently vacant Sears Building on Brookline Avenue, Boston and the construction of three new buildings; an office building, a 300-room hotel or office building and a garage.

The gross floor area of the proposed project (excluding the garage) totals 1,557,000 square feet of retail, office, clinical, and research and development space and will include day care facilities, a hotel and an athletic club. The garage will have capacity for 1525 cars. The Sears parking lot across from the proposed development on Park Drive is to be purchased by the developer, tranfered to the city and then restored as parkland.

Phase I of the project will involve the demolition of the warehouse additions, restoration of the main Sears Building, and construction of the garage up to the fifth floor. The second phase of the project will entail the development of the buildings on Park Drive and on Brookline Avenue and the addition of three new levels of parking to the garage.

Average daily water use at the proposed facility is projected to be about 144,760 gallons per day (gpd) or about 78,760 gallons more than previously used. Peak summer use will increase by about 152,560 gpd for a total of about 218,560 gpd. Wastewater flow will increase by about 93,680 gpd.

In order to fully evaluate the potential impacts of the proposed project the Commission requests that the following concerns be addressed in the Final Environmental Impact Report:

1. Figure 7.2-1 needs revision. The 48 inch water main on Brookline Avenue is owned by the Commission, not by the MWRA a indicated on the plan. Also, the Commission has a 48 inch wat main on Longwood Avenue and on Beacon Street which should be shown.

2. A new fire flow test should be conducted for Brookline Av since the data submitted by the proponent is somewhat dated (1986). The proponent may contact the Engineering Services Division to arrange for a new fire flow test.

3. Plans should be provided which show the locations of the existing water, sewer and storm drain connections and the prop locations. The services to be abandoned should be indicated.

4. An estimate of water required for landscape purposes at th Olmsted Plaza project site should be provided.

5. Water conservation measures to be employed indoors and ou should be identified. Low flow toilets (1.6 gallons per flush) are required under the State Plumbing Code. Conservation measu such as low water use plantings and irrigation controls should considered.

6. The Commission owns two 72 inch storm drains and one 24 in sanitary sewer which run through the Emerald Necklace site. Pl to restore the park on the site should be reviewed by the Commission prior to construction.

7. Grease traps will be required in the garage.

8. The Commission's Infiltration and Inflow (I/I) program focuses on areas where excessive I/I has been identified throug flow gaging. Based on an I/I Analysis completed a few years ag we have determined that the proposed project is not located in high priority area. Therefore, no recommendations for further field work or sewer system rehabilitation in the vicinity of th proposed project is scheduled at this time.

9. The proponent should indicate whether steam condensate fro the 3 boilers (mentioned on page 7-18) will be recirculated or will it be discharged to the sewer system. If condensate is to discharged to the sewer, then an estimate should be provided

10. On page 4-60 of the DEIR it states that the entire length o the Muddy River is considered Class C water under the Massachusetts Surface Water Quality Standards. The Department o Environmental Protection is currently considering changing the classification of the Muddy River to Class B water. The propone should note this in the DEIR.

The proponent is advised to consult with the Commission in the event that future development at the Van Ness site and the Peterborough site will effect the Commission's water or sewer systems.

Thank you for the opportunity to comment on this project.

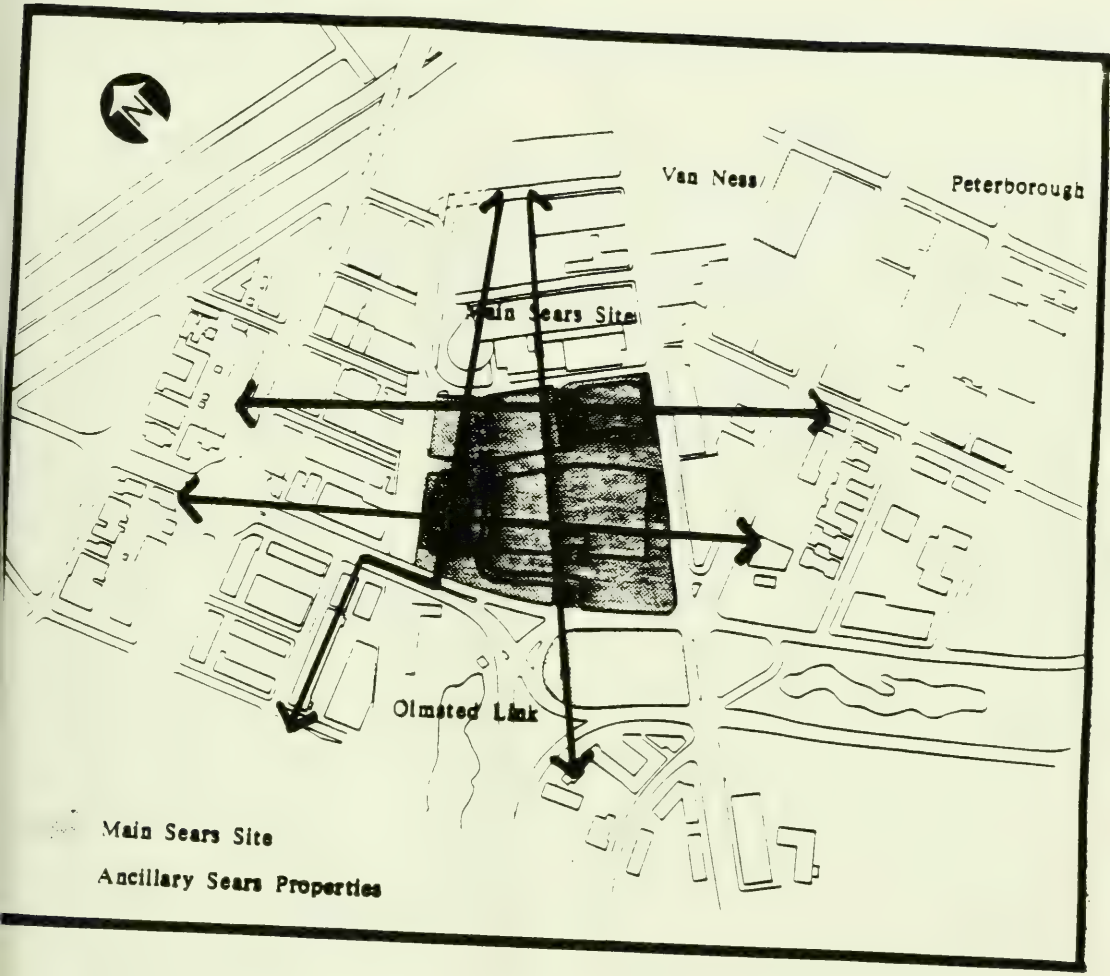
Yours truly,

John P. Sullivan, Jr. P.E.
Chief Engineer

cc: P. Lee, Olmsted Plaza Associates
S. McCandless, HMM Associates
D. Klabin, BRA
R. Mertens, BRA
S. Shea, BWSC

A/KEITH*/OLMSTED

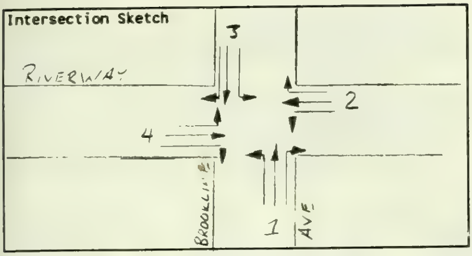
APPENDIX III



APPENDIX III: Site Sections For Urban Design Component
Preliminary Adequacy Determination
Olmsted Plaza

APPENDIX II

TRANSPORTATION APPENDIX



Project #: 3247
Project Name: BOSTON
Intersection: BROOKLINE/RIVERWAY
File: 3247-A
Time Period: 7:00 am / 9:00 am
Date of Count: THURSDAY 11/30/89
Counted By: HMM Asociates
Calc. By: HMM Associates

PEAK HOUR
7:15 AM

Approach 1: BROOKLINE NB

	LEFT		THRU		RIGHT	
TIME	CARS	TRKS	CARS	TRKS	CARS	TRKS
7:00 AM	31		107	2		
7:15 AM	40		111	8		
7:30 AM	51		138	6	2	
7:45 AM	38		117	4	2	
8:00 AM	41		121	3		
8:15 AM	25		119	3	1	
8:30 AM	26		114	5	1	
8:45 AM	28		117	6	1	

	LEFT		THRU		RIGHT	
	VEH	%TRK	VEH	%TRK	VEH	%TRK
	31	0%	109	2%	0	0%
	40	0%	119	7%	0	0%
	51	0%	144	4%	2	0%
	38	0%	121	3%	2	0%
	41	0%	124	2%	0	0%
	25	0%	122	2%	1	0%
	26	0%	119	4%	1	0%
	28	0%	123	5%	1	0%
PEAK HOUR	170	0%	493	0%	3	0%

Approach 2: RIVERWAY WB

	LEFT		THRU		RIGHT	
TIME	CARS	TRKS	CARS	TRKS	CARS	TRKS
7:00 AM	5		198		181	
7:15 AM	3		293		198	
7:30 AM	1		267		210	
7:45 AM	1		275		189	
8:00 AM			270		193	
8:15 AM	2		279		178	
8:30 AM	1		267		171	
8:45 AM			258		172	

	LEFT		THRU		RIGHT	
	VEH	%TRK	VEH	%TRK	VEH	%TRK
	5	0%	198	0%	181	0%
	3	0%	293	0%	198	0%
	1	0%	267	0%	210	0%
	1	0%	275	0%	189	0%
	0	0%	270	0%	193	0%
	2	0%	279	0%	178	0%
	1	0%	267	0%	171	0%
	0	0%	258	0%	172	0%
PEAK HOUR	3	0%	1033	0%	714	0%

Approach 3: BROOKLINE SB

	LEFT		THRU		RIGHT	
TIME	CARS	TRKS	CARS	TRKS		TRKS
7:00 AM	48		69	1		
7:15 AM	45		58	2	1	
7:30 AM	59		85	2	1	
7:45 AM	44		88	3	3	
8:00 AM	34		65	4	1	
8:15 AM	38		73	3	2	
8:30 AM	36		76	1	1	
8:45 AM	32		68	2	2	

	LEFT		THRU		RIGHT	
	VEH	%TRK	VEH	%TRK	VEH	%TRK
	48	0%	70	1%	0	0%
	45	0%	60	3%	1	0%
	59	0%	87	2%	1	0%
	44	0%	91	3%	3	0%
	34	0%	69	6%	1	0%
	38	0%	76	4%	2	0%
	36	0%	77	1%	1	0%
	32	0%	70	3%	2	0%
PEAK HOUR	140	0%	308	0%	6	0%

Approach 4: RIVERWAY EB

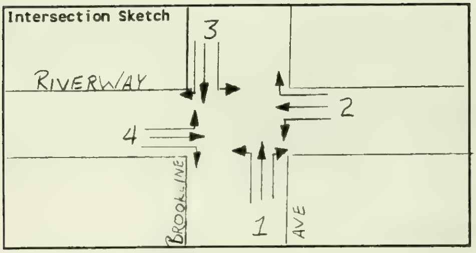
	LEFT		THRU		RIGHT	
TIME	CARS	TRKS	CARS	TRKS	CARS	TRKS
7:00 AM	5		111		3	
7:15 AM	5		90		1	
7:30 AM	6		94		3	
7:45 AM	5		128		10	
8:00 AM	4		107		11	
8:15 AM	1		113		7	
8:30 AM	2		110		6	
8:45 AM	1		101		5	

	LEFT		THRU		RIGHT	
	VEH	%TRK	VEH	%TRK	VEH	%TRK
	5	0%	111	0%	3	0%
	5	0%	90	0%	1	0%
	6	0%	94	0%	3	0%
	5	0%	128	0%	10	0%
	4	0%	107	0%	11	0%
	1	0%	113	0%	7	0%
	2	0%	110	0%	6	0%
	1	0%	101	0%	5	0%
PEAK HOUR	8	0%	423	0%	29	0%

TOTAL INTERSECTION VOLUMES

	APP #1			APP #2				APP #3			APP #4		
TIME	VEH	%TRK	PHF	VEH	%TRK	PHF		VEH	%TRK	PHF	VEH	%TRK	PHF
7:00 AM	657	3%	0.8338	1821	0%	0.922		509	2%	0.8656	461	0%	0.8059
7:15 AM	682	3%	0.8655	1900	0%	0.962		495	2%	0.8418	464	0%	0.8112
7:30 AM	671	2%	0.8515	1865	0%	0.975		505	2%	0.8588	489	0%	0.8549
7:45 AM	620	2%	0.9394	1826	0%	0.982		472	2%	0.8551	504	0%	0.8811
8:00 AM	611	3%	0.9258	1791	0%	0.967		438	2%	0.944	468	0%	0.959

Intersection Sketch



Project #: 3247
Project Name: OLMSTED PLAZA
Intersection: BROOKLINE/RIVERWAY
File: 3247-P
Time Period: 4:00 pm / 6:00 pm
Date of Count: WEDNESDAY 11/29/89
Counted By: HMM Associates
Calc. By: HMM Associates

PEAK HOUR
4:45 PM

Approach 1: BROOKLINE NB

	LEFT		THRU		RIGHT	
TIME	CARS	TRKS	CARS	TRKS	CARS	TRKS
4:00 PM	37		69	3	3	
4:15 PM	39		79	1	3	
4:30 PM	36		85	2	1	
4:45 PM	37		83	1		
5:00 PM	31		72	1	2	
5:15 PM	35		68	1	2	
5:30 PM	30		66	1		
5:45 PM	30		69			

	LEFT		THRU		RIGHT	
	VEH	%TRK	VEH	%TRK	VEH	%TRK
	37	0%	72	4%	3	0%
	39	0%	80	1%	3	0%
	36	0%	87	2%	1	0%
	37	0%	84	1%	0	0%
	31	0%	73	1%	2	0%
	35	0%	69	1%	2	0%
	30	0%	67	1%	0	0%
	30	0%	69	0%	0	0%
PEAK HOUR	133	0%	293	1%	4	0%

Approach 2: RIVERWAY WB

	LEFT		THRU		RIGHT	
TIME	CARS	TRKS	CARS	TRKS	CARS	TRKS
4:00 PM	2		142	1	66	
4:15 PM			148		56	
4:30 PM			199	1	73	
4:45 PM			133	1	69	
5:00 PM	3		129	1	60	
5:15 PM			132		58	
5:30 PM			137		60	
5:45 PM	1		121	1	52	

	LEFT		THRU		RIGHT	
	VEH	%TRK	VEH	%TRK	VEH	%TRK
	2	0%	143	1%	66	0%
	0	0%	148	0%	56	0%
	0	0%	200	1%	73	0%
	0	0%	134	1%	69	0%
	3	0%	130	1%	60	0%
	0	0%	129	0%	58	0%
	0	0%	132	0%	60	0%
	1	0%	138	1%	52	0%
PEAK HOUR	3	0%	525	0%	247	0%

Approach 3: BROOKLINE SB

	LEFT		THRU		RIGHT	
TIME	CARS	TRKS	CARS	TRKS	CARS	TRKS
4:00 PM	87		135		5	
4:15 PM	99	1	139	3	2	
4:30 PM	109		170	2	1	
4:45 PM	95	1	140	2	1	
5:00 PM	110		190	2	1	
5:15 PM	96	1	196	2	3	
5:30 PM	107		178	1	2	
5:45 PM	90		159	2	1	

	LEFT		THRU		RIGHT	
	VEH	%TRK	VEH	%TRK	VEH	%TRK
	87	0%	135	0%	5	0%
	100	1%	142	2%	2	0%
	109	0%	172	1%	1	0%
	96	1%	142	1%	1	0%
	110	0%	192	1%	1	0%
	97	1%	198	1%	3	0%
	107	0%	179	1%	2	0%
	90	0%	161	1%	1	0%
PEAK HOUR	410	0%	711	1%	7	0%

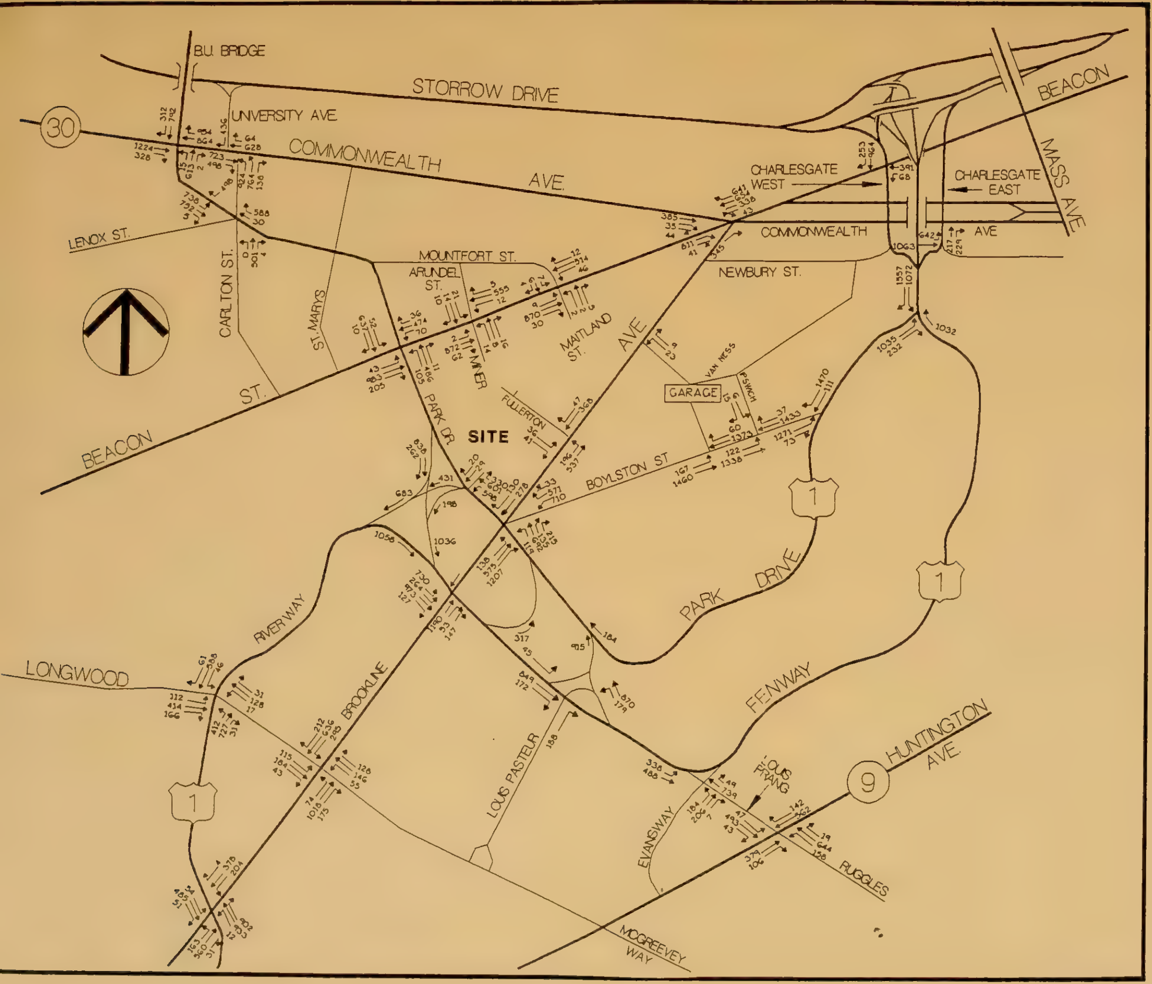
Approach 4: RIVERWAY EB

	LEFT		THRU		RIGHT	
TIME	CARS	TRKS	CARS	TRKS	CARS	TRKS
4:00 PM	5		177		8	
4:15 PM	5		182	1	5	2
4:30 PM	10		200	1	2	1
4:45 PM	4		170		6	1
5:00 PM	7		220		6	1
5:15 PM	16		199	2	3	
5:30 PM	8		203	1	2	
5:45 PM	6		178		4	1

	LEFT		THRU		RIGHT	
	VEH	%TRK	VEH	%TRK	VEH	%TRK
	5	0%	177	0%	8	0%
	5	0%	183	1%	7	29%
	10	0%	201	0%	3	33%
	4	0%	170	0%	7	14%
	7	0%	220	0%	7	14%
	16	0%	201	1%	3	0%
	8	0%	204	0%	2	0%
	6	0%	178	0%	5	20%
PEAK HOUR	35	0%	795	0%	19	11%

TOTAL INTERSECTION VOLUMES

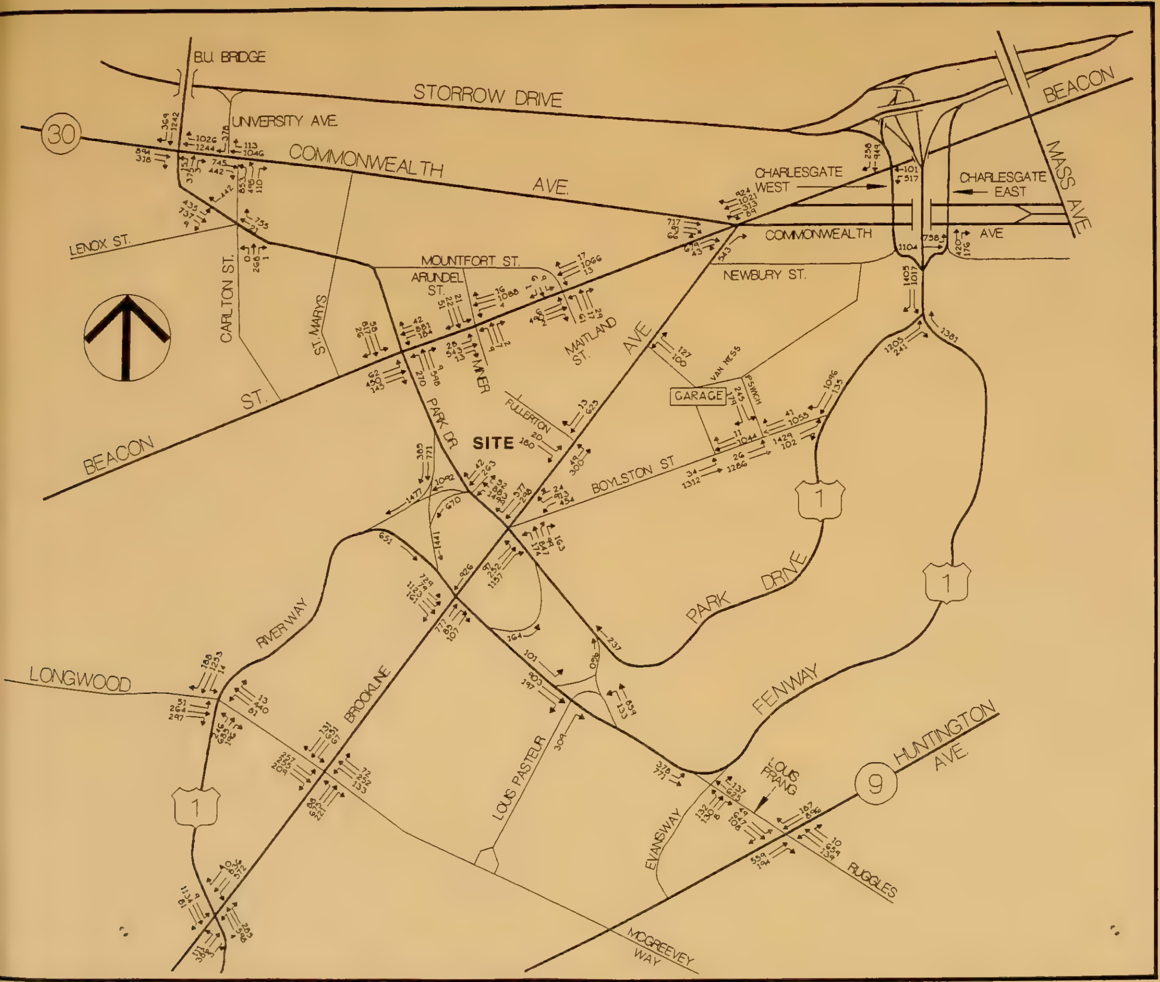
	APP #1			APP #2			APP #3			APP #4		
TIME	VEH	%TRK	PHF	VEH	%TRK	PHF	VEH	%TRK	PHF	VEH	%TRK	PHF
4:00 PM	479	1%	0.9657	891	0%	0.816	992	1%	0.8794	780	1%	0.9112
4:15 PM	473	1%	0.9536	873	0%	0.799	1068	1%	0.8812	824	1%	0.8803
4:30 PM	457	1%	0.9214	856	0%	0.784	1122	1%	0.9257	849	1%	0.9071
4:45 PM	430	1%	0.8884	775	0%	0.954	1128	1%	0.9307	849	1%	0.9071
5:00 PM	408	1%	0.9623	763	0%	0.988	1141	1%	0.9414	857	1%	0.9156



OLMSTED PLAZA

AM 1995 BUILD
TRAFFIC VOLUMES
(WITHOUT MAITLAND ST.
CONNECTION)

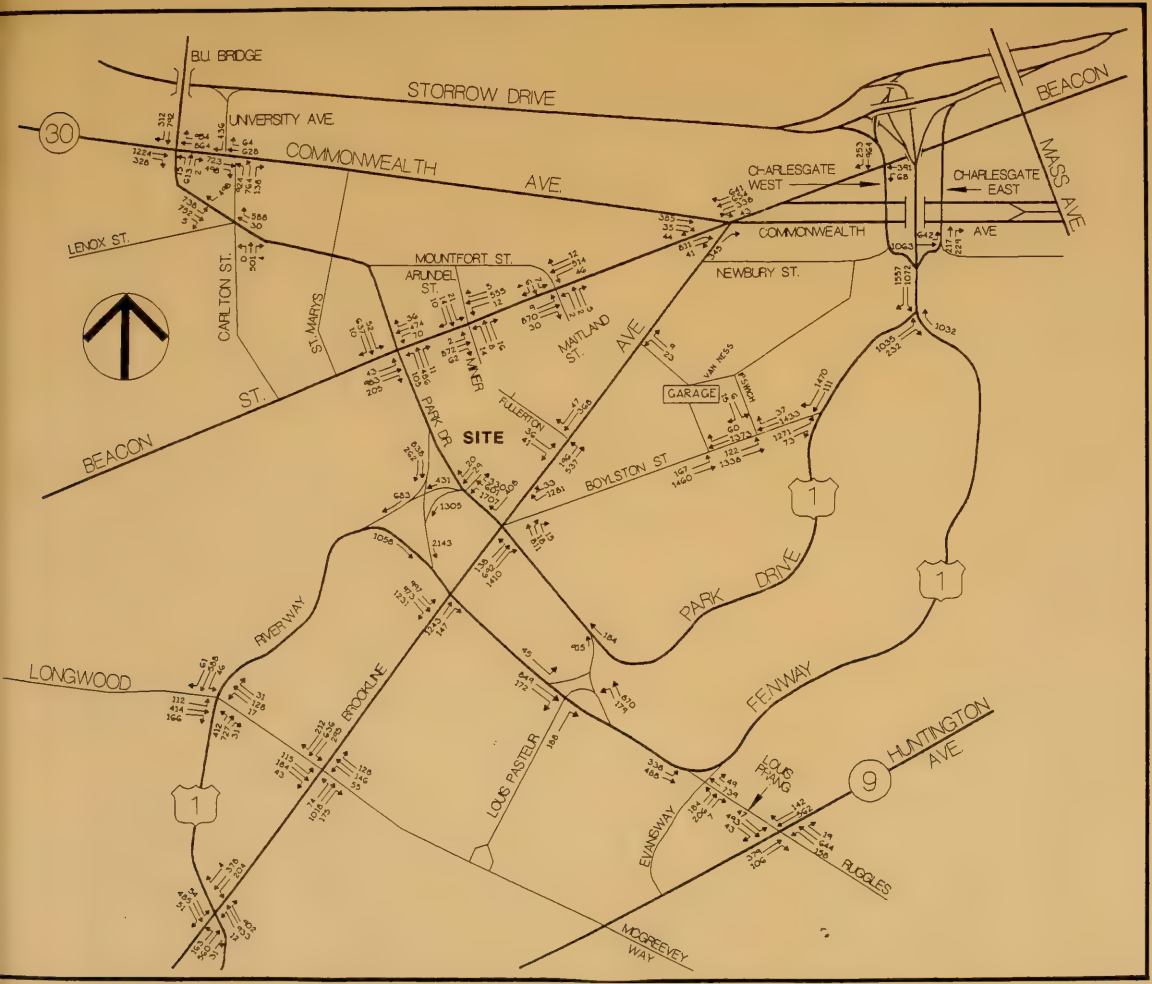
FIGURE



OLMSTED PLAZA

PM 1995 BUILD
TRAFFIC VOLUMES
(WITHOUT MAITLAND STREET
CONNECTOR)

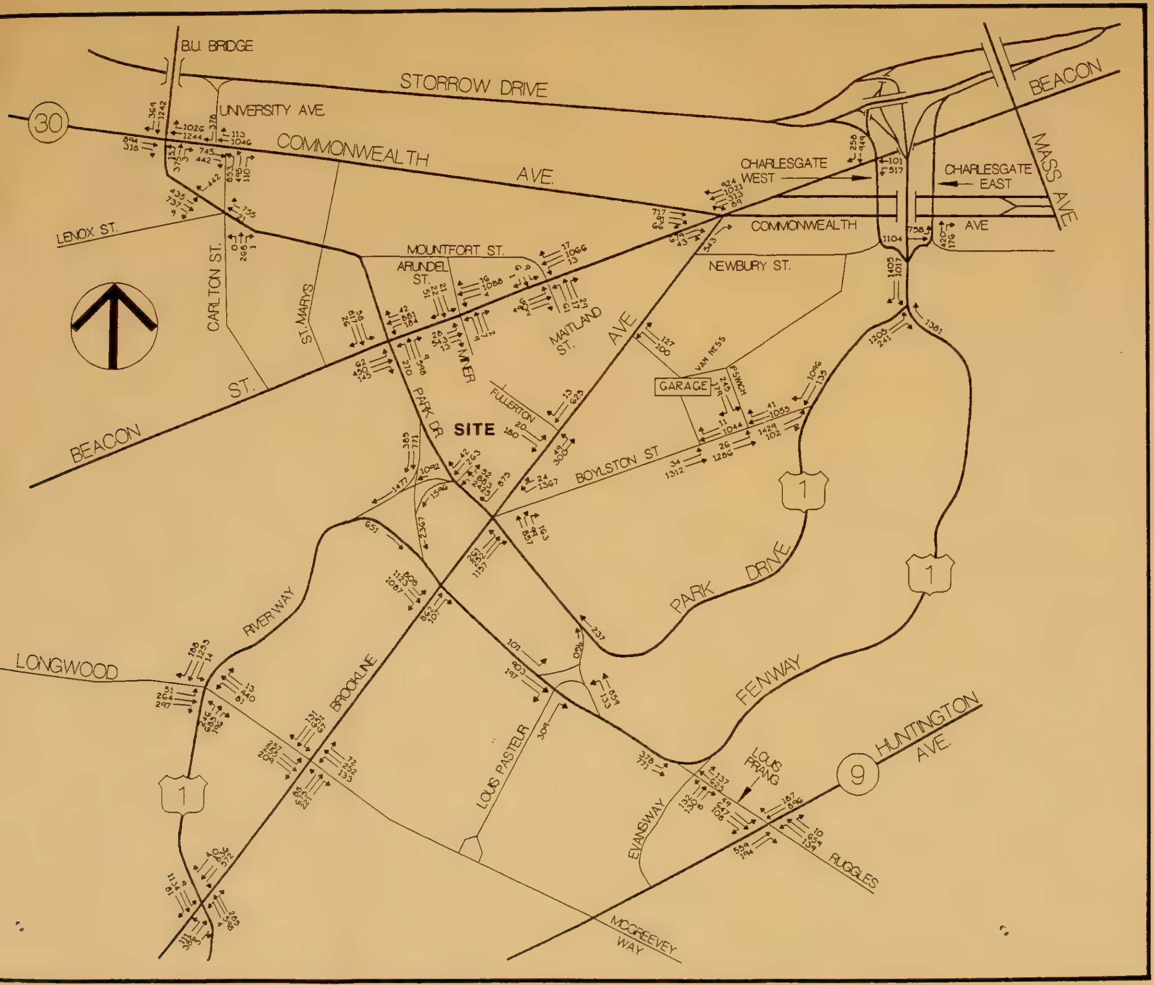
FIGURE



OLMSTED PLAZA

AM 1995 BUILD
TRAFFIC VOLUMES
"PURE ROTARY"

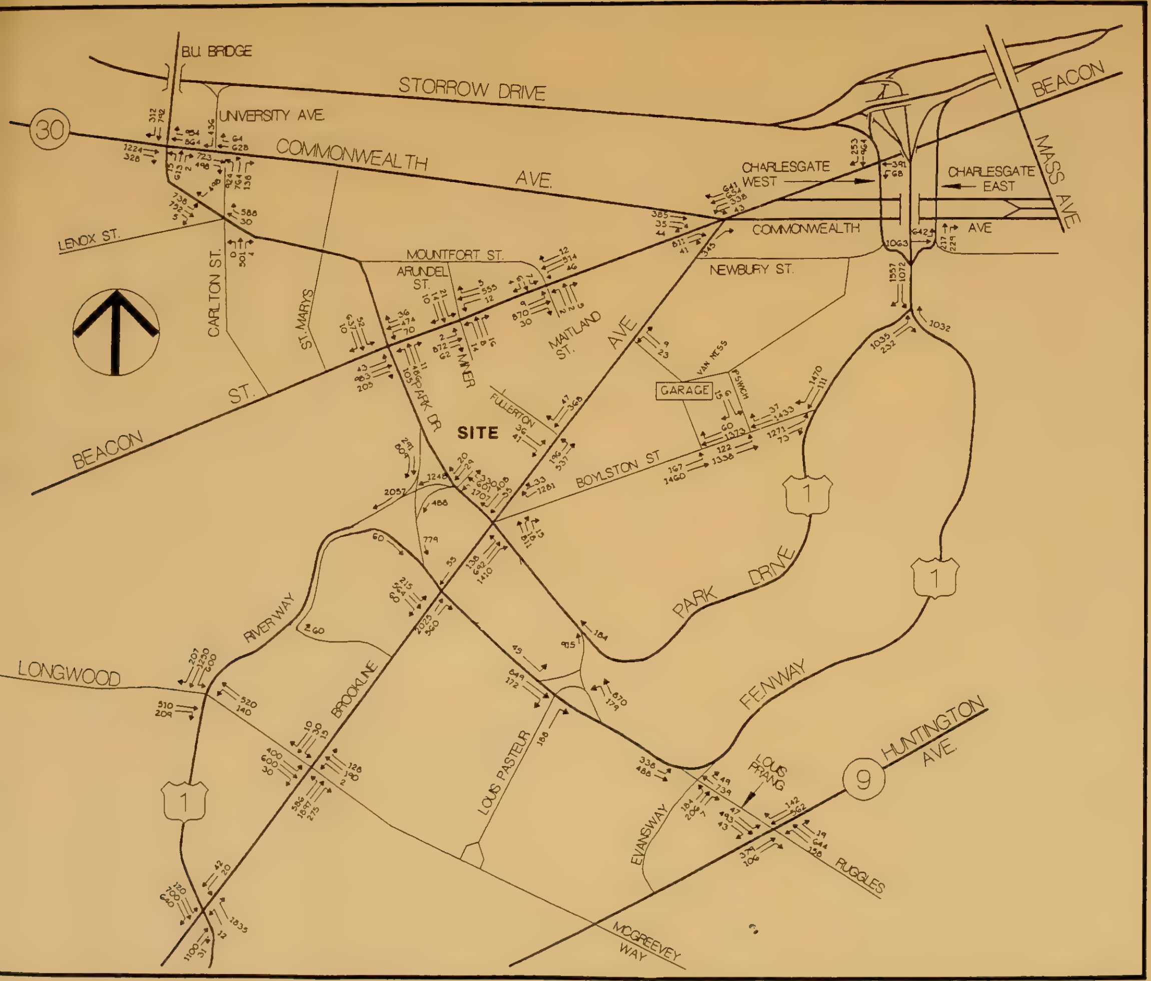
FIGURE



OLMSTED PLAZA

PM 1995 BUILD
TRAFFIC VOLUMES
"PURE ROTARY"

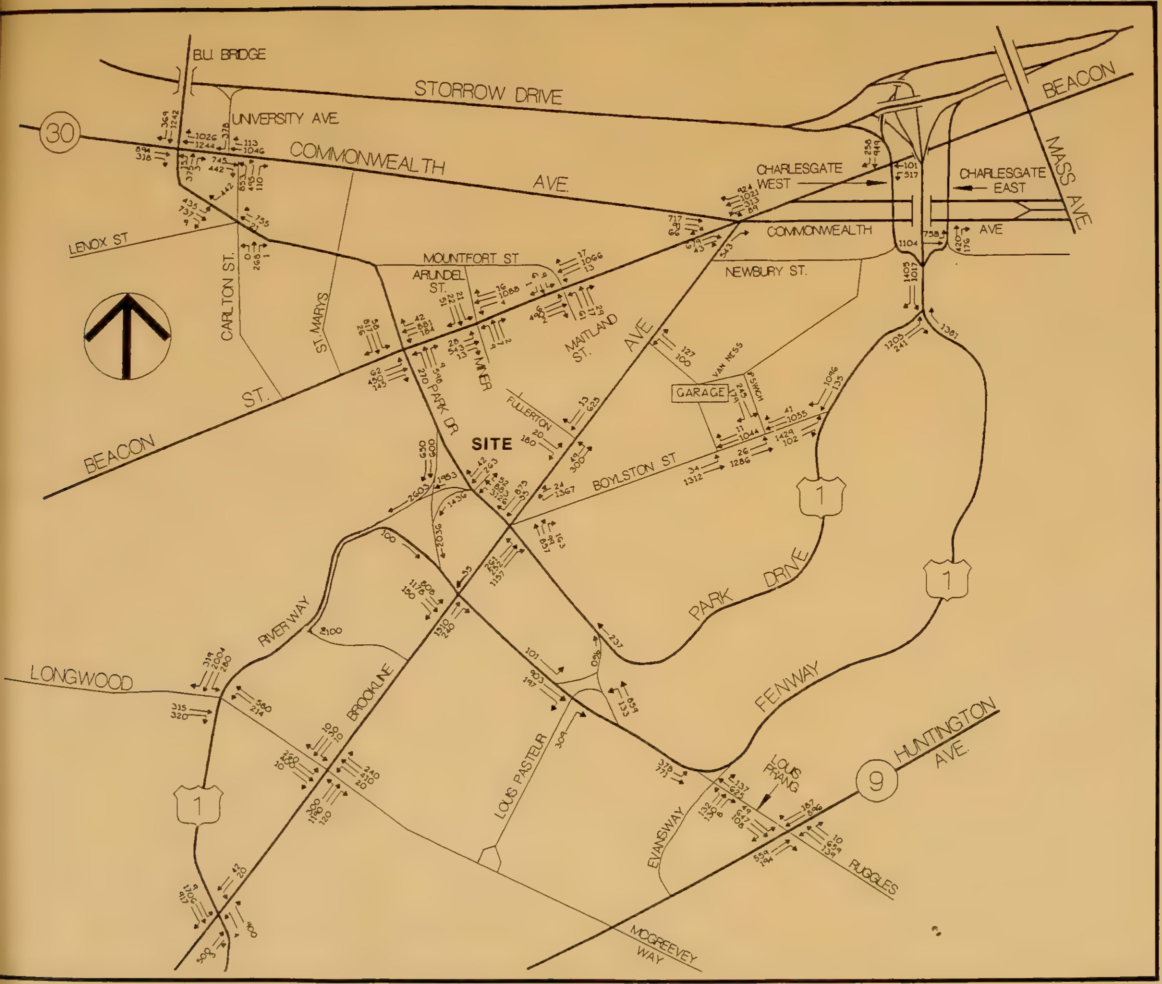
FIGURE



OLMSTED PLAZA

AM 1995 BUILD
TRAFFIC VOLUMES
"SHORT U.S. COUPLET"

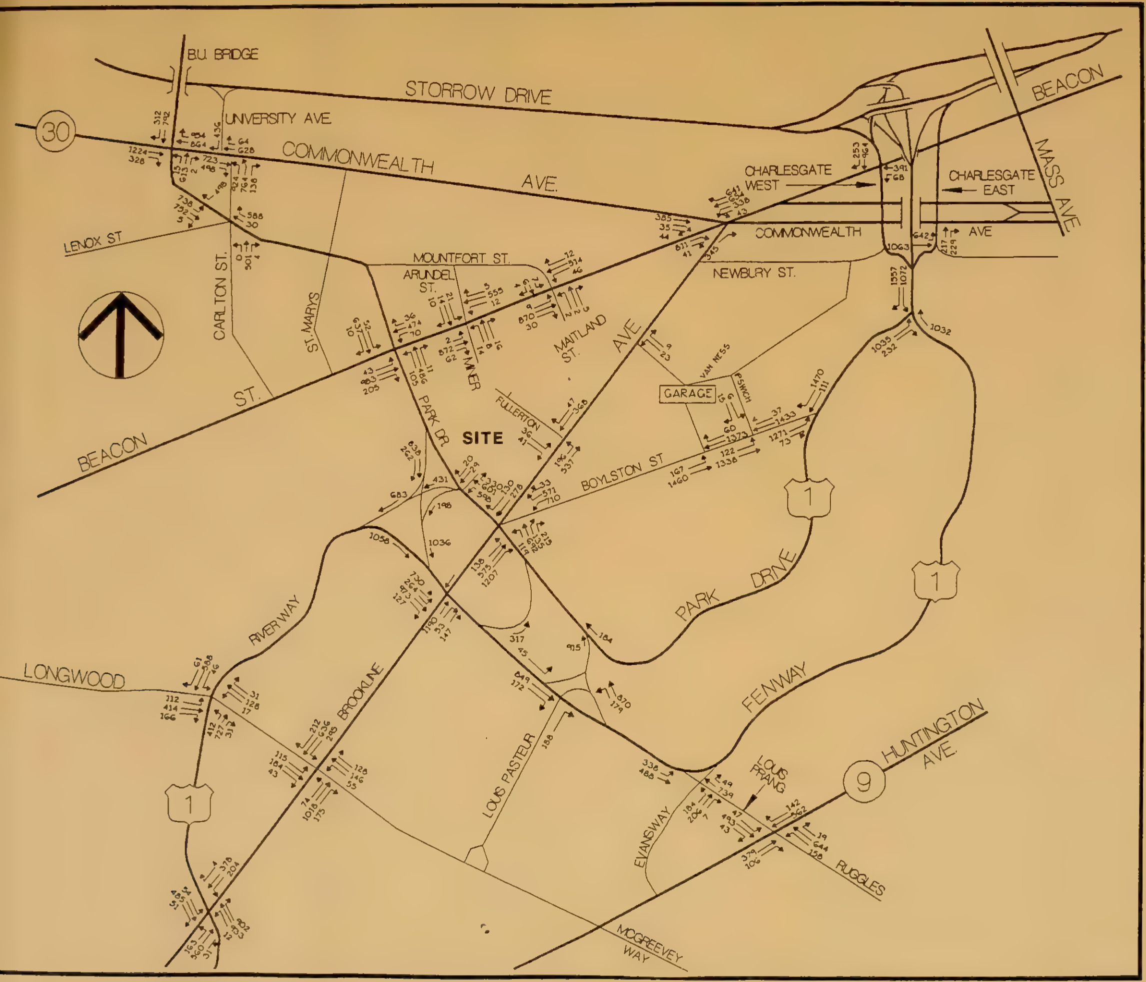
FIGURE



OLMSTED PLAZA

PM 1995 BUILD
TRAFFIC VOLUMES
"SHORT U.S. COUPLET"

FIGURE



OLMSTED PLAZA

AM 1995 BUILD TRAFFIC VOLUMES
(WITHOUT MAITLAND ST. CONNECTION)

FIGURE

```
5 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
LSTON/IPSWICH
AM EXISTING
e:11-02-1989              time:17:25:36
T DATA SET NAMES LOADED OR SAVED
UME=25AEXST    GEOMETRICS=25EXST     SIGNAL=25EXST
ATED IN CBD:Y
UME & GEOMETRICS
      VOLUMES      # OF LANES     LANE WIDTH     CROSS
R  LT   TH   RT    LT TH RT      LT   TH   RT    WALK
  120 1270    0     0  2  0     0.0 12.0  0.0    48
    0 1154   36     0  2  0     0.0 13.0  0.0    48
    0    0    0     0  0  0     0.0  0.0  0.0     0
    6    0   15     1  0  1    12.0  0.0 12.0     0

AFFIC & ROADWAY CONDITIONS
               ADJ PARK                     PEDESTRIANS         ARR
R GRADE  %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
  0.0%  2.0%   Y     5    2   .900   30   Y    19.0    3
  0.0%  2.0%   N     0    1   .940   25   Y    19.0    3
  0.0%  0.0%         0    0   .000    0         7.0    0
  0.0%  2.0%   N     0    0   .800   20   Y     7.0    3

ASINGS
  EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
  l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
  *  *           *  *                             65.0    0    A
                                      *     *     15.0    0    A

LE=  86.0

UME ADJUSTMENT WORKSHEET
RT 1 (MOVEMENT ADJUSTMENTS)
R  LTV  THV  RTV   PHF  LTFR THFR RTFR
   120 1270    0  .900   133 1411    0
     0 1154   36  .940     0 1228   38
     0    0    0  .000     0    0    0
     6    0   15  .800     8    0   19

RT 2 (LANE GROUP ADJUSTMENTS)
R LN GROUP  FLOW N   LU    v  Plt Prt
  LT-TH     1544 2 1.05 1622 0.09 0.00
  TH-RT     1266 2 1.05 1329 0.00 0.03
  LT           8 1 1.00    8 1.00 0.00
  RT          19 1 1.00   19 0.00 1.00

RT 3 (OPPOSING VOLUME ADJUSTMENTS)
FT TURN                 OPPOSING APPROACH
ING OPPOSED       VOLUMES     % OPPOSING LEFT TURN      # LANES     OPPOSING
               LT   TH   RT         LT   TH   RT        LT  TH  RT     VOLUME
STBOUND         0 1228   38        100  100  100         0   2   0      1266
UTHBOUND        0    0    0          0    0    0         0   0   0         0

TURATION FLOW ADJUSTMENT WORKSHEET
R LN GROUP  IDEAL N  Fwid   Fhv   Fgr Fpark  Fbus Farea    Frt   Flt    s
  LT-TH     1800  2 1.000 0.990 1.000 0.937 0.996 0.900 1.000 0.575 1720
  TH-RT     1800  2 1.033 0.990 1.000 1.000 0.998 0.900 0.995 1.000 3293
  LT        1800  1 1.000 0.990 1.000 1.000 1.000 0.900 1.000 0.950 1524
  RT        1800  1 1.000 0.990 1.000 1.000 1.000 0.900 0.850 1.000 1363

PPLEMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
PUT VARIABLES
R  C   G  N   Va   Vm  Vlt  Plt No   Vo Plto
  86  65  2 1544 1399  133 0.09  2 1266 0.00
LCULATIONS
R Sop     Yo     Gu     Fs     Pl      Gq     Pt      Gf        El     Fm    Flt
 3600 0.352 53.610 0.084 0.710 11.390 0.290  0.814    13.429 0.149 0.575
```

```
DIR LN GROUP    v    s  v/s  g/C    c  v/c  CRITICAL
EB  LT-TH    1622 1720 0.94 0.76 1300 1.25     *
WB  TH-RT    1329 3293 0.40 0.76 2489 0.53
SB  LT          8 1524 0.00 0.17  266 0.03
SB  RT         19 1363 0.01 0.17  238 0.08     *

CYCLE= 86.0  LOST= 6.0  SUM V/S CRIT= 0.96 TOTAL V/C= 1.03

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C      d1    c      d2    PF   Delay LOS Avg Q  9
EB  LT-TH    1.25 0.76  86.0  34.02 1300  141.00 0.85  148.76  F   68.3
WB  TH-RT    0.53 0.76  86.0   3.27 2489    0.18 0.85    2.93  A    7.4
SB  LT       0.03 0.17  86.0  22.38  266    0.00 1.00   22.38  C    0.1
SB  RT       0.08 0.17  86.0  22.58  238    0.00 0.85   19.20  C    0.4

DIR Delay LOS
EB 148.76  F
WB   2.93  A
SB  20.11  C
INTERSECTION DELAY = 82.52 INTERSECTION LOS=F

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

THE V/C RATIO CAN'T BE .95 FOR THE GIVEN CONDITIONS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -5.9 secs yellow + red cle
suggested timing phase 2 is   0.0 secs green,  -0.1 secs yellow + red cle
```

```
5 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
LSTON/IPSWICH
AM EXISTING
e:11-02-1989                 time:17:33:48
T DATA SET NAMES LOADED OR SAVED
JME=25PEXST    GEOMETRICS=25EXST      SIGNAL=25EXST
ATED IN CBD:Y
JME & GEOMETRICS
    VOLUMES          # OF LANES       LANE WIDTH       CROSS
  LT   TH   RT      LT TH RT       LT    TH    RT      WALK
  25 1235    0       0  2  0      0.0 12.0   0.0      48
   0  947   40       0  2  0      0.0 13.0   0.0      48
   0    0    0       0  0  0      0.0  0.0   0.0       0
 189    0  175       1  0  1     12.0  0.0  12.0       0

FFIC & ROADWAY CONDITIONS
              ADJ PARK                  PEDESTRIANS          ARR
 GRADE %HV    Y/N MOVES BUSES   PHF  CROSS BUT MIN TIME TYPE
 0.0%   2.0%   Y      5     2   .900    30   Y     19.0    3
 0.0%   2.0%   N      0     1   .940    25   Y     19.0    3
 0.0%   0.0%          0     0   .000     0          7.0    0
 0.0%   2.0%   N      0     0   .800    20   Y      7.0    3

SINGS
 EASTBOUND    WESTBOUND    NORTHBOUND  SOUTHBOUND GREEN   Y+R PRE/ACT
 l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 *  *            *  *                                65.0    0    A
                                        *     *      15.0    0    A

LE=  86.0

JME ADJUSTMENT WORKSHEET
T 1 (MOVEMENT ADJUSTMENTS)
  LTV  THV  RTV    PHF   LTFR THFR RTFR
   25 1235    0  .900     28 1372    0
    0  947   40  .940      0 1007   43
    0    0    0  .000      0    0    0
  189    0  175  .800    236    0  219

T 2 (LANE GROUP ADJUSTMENTS)
 LN GROUP    FLOW N    LU     v   Plt   Prt
 LT-TH       1400 2 1.05 1470 0.02 0.00
 TH-RT       1050 2 1.05 1103 0.00 0.04
 LT           236 1 1.00  236 1.00 0.00
 RT           219 1 1.00  219 0.00 1.00

T 3 (OPPOSING VOLUME ADJUSTMENTS)
T TURN                    OPPOSING APPROACH
NG OPPOSED         VOLUMES       % OPPOSING LEFT TURN      # LANES      OPPOSING
                LT   TH    RT       LT    TH    RT       LT  TH  RT      VOLUME
TBOUND           0 1007    43      100   100   100        0   2   0      1050
THBOUND          0    0     0        0     0     0        0   0   0         0

URATION FLOW ADJUSTMENT WORKSHEET
 LN GROUP    IDEAL N  Fwid    Fhv    Fgr  Fpark  Fbus  Farea    Frt    Flt     s
 LT-TH       1800  2 1.000 0.990 1.000 0.937 0.996 0.900 1.000 0.878 2628
 TH-RT       1800  2 1.033 0.990 1.000 1.000 0.998 0.900 0.994 1.000 3288
 LT          1800  1 1.000 0.990 1.000 1.000 1.000 0.900 1.000 0.950 1524
 RT          1800  1 1.000 0.990 1.000 1.000 1.000 0.900 0.850 1.000 1363

PLEMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
UT VARIABLES
  C    G  N    Va    Vm   Vlt  Plt No    Vo Plto
 86   65  2 1400 1399    28 0.02  2 1050 0.00
CULATIONS
 Sop     Yo      Gu     Fs     Pl      Gq     Pt      Gf        El     Fm    Flt
3600 0.292 56.353 0.219 0.096  8.647 0.904  6.651     5.143 0.755 0.878
```

```
DIR LN GROUP     v    s  v/s  g/C    c  v/c  CRITICAL
EB  LT-TH     1470 2628 0.56 0.76 1986 0.74     *
WB  TH-RT     1103 3288 0.34 0.76 2485 0.44
SB  LT         236 1524 0.16 0.17  266 0.89
SB  RT         219 1363 0.16 0.17  238 0.92     *

CYCLE= 86.0  LOST= 6.0  SUM V/S CRIT= 0.72 TOTAL V/C= 0.77

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C      d1    c      d2   PF   Delay LOS Avg Q  95
EB  LT-TH     0.74 0.76  86.0   4.42 1986    1.06 0.85    4.66  A    8.2
WB  TH-RT     0.44 0.76  86.0   2.93 2485    0.09 0.85    2.57  A    6.1
SB  LT        0.89 0.17  86.0  26.36  266   19.90 1.00   46.26  E    5.4
SB  RT        0.92 0.17  86.0  26.53  238   26.54 0.85   45.11  E    4.9

DIR Delay LOS
EB   4.66  A
WB   2.57  A
SB  45.70  E
INTERSECTION DELAY = 10.07 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  24.8 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -4.7 secs yellow + red cle
suggested timing phase 2 is   0.0 secs green,  -1.3 secs yellow + red cle
```

```
 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
S 89 EXISTING AM
WOOD
:11-13-1989                 time:15:55:29
 DATA SET NAMES LOADED OR SAVED
ME=26AEXT     GEOMETRICS=26EXST      SIGNAL=26SIG
TED IN CBD:Y
ME & GEOMETRICS
    VOLUMES         # OF LANES       LANE WIDTH       CROSS
 LT    TH    RT     LT  TH  RT      LT    TH    RT     WALK
 23   437     0      0   1   0     0.0  15.0   0.0     24
  0   229   384      0   1   1     0.0  11.0  11.0     46
  0     0     0      0   0   0     0.0   0.0   0.0      0
138     0    15      1   0   1    10.0   0.0  10.0     32

FIC & ROADWAY CONDITIONS
               ADJ  PARK                   PEDESTRIANS          ARR
GRADE  %HV    Y/N  MOVES  BUSES   PHF  CROSS  BUT MIN TIME   TYPE
0.0%   1.0%    N      0      0   .850    10    N     18.5      3
0.0%   1.0%    N      0      0   .850    10          18.5      3
0.0%   0.0%           0      0   .000     0          12.0      0
0.0%   0.0%    Y      3      0   .850    75    Y     12.0      3

INGS
EASTBOUND    WESTBOUND    NORTHBOUND    SOUTHBOUND GREEN   Y+R PRE/ACT
l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
*  *           *  *                          *  47.0    0    P
                                    *     *     20.0    0    A

E=  73.0

ME ADJUSTMENT WORKSHEET
 1 (MOVEMENT ADJUSTMENTS)
 LTV   THV   RTV    PHF    LTFR  THFR  RTFR
  23   437     0   .850     27   514     0
   0   229   384   .850      0   269   452
   0     0     0   .000      0     0     0
 138     0    15   .850    162     0    18

 2 (LANE GROUP ADJUSTMENTS)
 LN GROUP   FLOW N   LU     v   Plt   Prt
 LT-TH       541 1 1.00   541 0.05 0.00
 TH          269 1 1.00   269 0.00 0.00
 RT          452 1 1.00   452 0.00 1.00
 LT          162 1 1.00   162 1.00 0.00
 RT           18 1 1.00    18 0.00 1.00

 3 (OPPOSING VOLUME ADJUSTMENTS)
 TURN                   OPPOSING APPROACH
NG OPPOSED         VOLUMES        % OPPOSING LEFT TURN      # LANES       OPPOSING
               LT    TH    RT        LT    TH    RT        LT  TH  RT      VOLUME
TBOUND          0   269   452       100   100     0         0   1   1        269
THBOUND         0     0     0         0     0     0         0   0   0          0

URATION FLOW ADJUSTMENT WORKSHEET
 LN GROUP  IDEAL N  Fwid    Fhv    Fgr  Fpark  Fbus  Farea   Frt    Flt     s
 LT-TH     1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1773
 TH        1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1558
 RT        1800  1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 1269
 LT        1800  1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 1436
 RT        1800  1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 1137
```

```
CALCULATIONS
DIR Sop    Yo     Gu     Fs     Pl      Gq     Pt      Gf        El     Fm    Flt
EB 1800 0.150 42.424 0.707 0.050  4.576 0.950  4.208     1.592 1.000 1.000

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP     v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH      541 1773 0.31 0.64 1142 0.47
WB  TH         269 1558 0.17 0.64 1003 0.27
WB  RT         452 1269 0.36 0.64  817 0.55     *
SB  LT         162 1436 0.11 0.27  394 0.41     *
SB  RT          18 1137 0.02 0.27  312 0.06

CYCLE= 73.0  LOST= 6.0  SUM V/S CRIT= 0.47 TOTAL V/C= 0.51

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C      d1     c       d2    PF   Delay LOS Avg Q  95
EB  LT-TH    0.47 0.64  73.0   5.06 1142     0.24 1.00    5.31  B    3.9
WB  TH       0.27 0.64  73.0   4.25 1003     0.04 1.00    4.29  A    1.9
WB  RT       0.55 0.64  73.0   5.46  817     0.63 1.00    6.10  B    3.3
SB  LT       0.41 0.27  73.0  16.49  394     0.42 1.00   16.90  C    2.4
SB  RT       0.06 0.27  73.0  14.85  312     0.00 1.00   14.85  B    0.3

DIR Delay LOS
EB   5.31  B
WB   5.42  B
SB  16.70  C
INTERSECTION DELAY =  6.79 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  11.9 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -4.6 secs yellow + red cle
suggested timing phase 2 is   0.0 secs green,  -1.4 secs yellow + red cle
```

```
5 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
RS 89 EXISTING PM
GWOOD/CHAPEL
e:11-13-1989                time:15:56:26
T DATA SET NAMES LOADED OR SAVED
UME=26PEXST    GEOMETRICS=26EXST     SIGNAL=26SIG
ATED IN CBD:Y
UME & GEOMETRICS
    VOLUMES        # OF LANES      LANE WIDTH       CROSS
  LT   TH   RT     LT TH RT       LT    TH    RT     WALK
  21  345    0      0  1  0      0.0  15.0   0.0     24
   0  500  308      0  1  1      0.0  11.0  11.0     46
   0    0    0      0  0  0      0.0   0.0   0.0      0
 310    0   26      1  0  1     10.0   0.0  10.0     32

FFIC & ROADWAY CONDITIONS
             ADJ PARK                  PEDESTRIANS        ARR
 GRADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
 0.0%  1.0%   N     0     0   .850   10   N    18.5     3
 0.0%  1.0%   N     0     0   .850   10        18.5     3
 0.0%  0.0%         0     0   .000    0        12.0     0
 0.0%  0.0%   Y     3     0   .850   75   Y    12.0     3

SINGS
 EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
 l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 *  *           *  *                          *  47.0   0    P
                                     *     *     20.0   0    A

LE=  73.0

UME ADJUSTMENT WORKSHEET
T 1 (MOVEMENT ADJUSTMENTS)
. LTV  THV  RTV   PHF  LTFR THFR RTFR
   21  345    0  .850    25  406    0
    0  500  308  .850     0  588  362
    0    0    0  .000     0    0    0
  310    0   26  .850   365    0   31

T 2 (LANE GROUP ADJUSTMENTS)
 LN GROUP   FLOW N   LU     v  Plt  Prt
 LT-TH       431 1 1.00   431 0.06 0.00
 TH          588 1 1.00   588 0.00 0.00
 RT          362 1 1.00   362 0.00 1.00
 LT          365 1 1.00   365 1.00 0.00
 RT           31 1 1.00    31 0.00 1.00

T 3 (OPPOSING VOLUME ADJUSTMENTS)
T TURN                    OPPOSING APPROACH
NG OPPOSED        VOLUMES      % OPPOSING LEFT TURN      # LANES      OPPOSING
              LT   TH   RT       LT   TH   RT          LT  TH  RT      VOLUME
TBOUND         0  588  362      100  100    0           0   1   1        588
THBOUND        0    0    0        0    0    0           0   0   0          0

URATION FLOW ADJUSTMENT WORKSHEET
 LN GROUP  IDEAL N  Fwid   Fhv    Fgr  Fpark  Fbus  Farea   Frt    Flt     s
 LT-TH      1800 1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 0.946 1678
 TH         1800 1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1558
 RT         1800 1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 1269
 LT         1800 1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 1436
 RT         1800 1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 1137
```

```
CALCULATIONS
DIR Sop    Yo     Gu     Fs     Pl      Gq     Pt      Gf        El     Fm    Flt
EB 1800 0.327 34.379 0.507 0.057 12.621 0.943 10.227    2.217 0.946 0.946

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP      v     s   v/s  g/C     c  v/c  CRITICAL
EB  LT-TH       431 1678 0.26 0.64 1080 0.40
WB  TH          588 1558 0.38 0.64 1003 0.59      *
WB  RT          362 1269 0.29 0.64  817 0.44
SB  LT          365 1436 0.25 0.27  394 0.93      *
SB  RT           31 1137 0.03 0.27  312 0.10

CYCLE= 73.0  LOST= 6.0  SUM V/S CRIT= 0.63 TOTAL V/C= 0.69

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C      d1    c       d2    PF   Delay LOS Avg Q  95%Q
EB  LT-TH     0.40 0.64  73.0   4.73 1080    0.13 1.00    4.87  A    3.1
WB  TH        0.59 0.64  73.0   5.65 1003    0.66 1.00    6.32  B    4.2
WB  RT        0.44 0.64  73.0   4.93  817    0.26 1.00    5.19  B    2.6
SB  LT        0.93 0.27  73.0  19.60  394   19.94 1.00   39.54  D    6.7
SB  RT        0.10 0.27  73.0  15.03  312    0.00 1.00   15.03  C    0.5

DIR Delay LOS
EB   4.87  A
WB   5.89  B
SB  37.64  D
INTERSECTION DELAY = 12.71 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  17.9 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -3.6 secs yellow + red cle
suggested timing phase 2 is   0.0 secs green,  -2.4 secs yellow + red cle
```

```
985 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
OYLSTON/IPSWICH
5 AM NO-BUILD
ate:11-02-1989              time:17:38:02
AST DATA SET NAMES LOADED OR SAVED
OLUME=25ANB      GEOMETRICS=25EXST      SIGNAL=25EXST
OCATED IN CBD:Y
OLUME & GEOMETRICS
     VOLUMES          # OF LANES      LANE WIDTH       CROSS
IR  LT   TH    RT     LT TH RT      LT    TH    RT     WALK
B  122 1344     0      0  2  0      0.0 12.0  0.0      48
B    0 1253    37      0  2  0      0.0 13.0  0.0      48
B    0    0     0      0  0  0      0.0  0.0  0.0       0
B    6    0    15      1  0  1     12.0  0.0 12.0       0

RAFFIC & ROADWAY CONDITIONS
                ADJ PARK                PEDESTRIANS          ARR
IR GRADE %HV    Y/N MOVES BUSES   PHF CROSS BUT MIN TIME TYPE
B  0.0%  2.0%    Y      5     2   .900   30   Y     19.0    3
B  0.0%  2.0%    N      0     1   .940   25   Y     19.0    3
B  0.0%  0.0%           0     0   .000    0          7.0    0
B  0.0%  2.0%    N      0     0   .800   20   Y      7.0    3

HASINGS
  EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
  l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
  *  *              *  *                                65.0   0    A
                                        *     *        15.0   0    A

CLE=  86.0

OLUME ADJUSTMENT WORKSHEET
ART 1 (MOVEMENT ADJUSTMENTS)
IR  LTV  THV  RTV    PHF  LTFR THFR RTFR
B   122 1344    0  .900   136 1493    0
B     0 1253   37  .940     0 1333   39
B     0    0    0  .000     0    0    0
B     6    0   15  .800     8    0   19

ART 2 (LANE GROUP ADJUSTMENTS)
IR LN GROUP   FLOW N    LU     v  Plt  Prt
B  LT-TH      1629 2 1.05 1710 0.08 0.00
B  TH-RT      1372 2 1.05 1441 0.00 0.03
B  LT            8 1 1.00    8 1.00 0.00
B  RT           19 1 1.00   19 0.00 1.00

ART 3 (OPPOSING VOLUME ADJUSTMENTS)
EFT TURN                 OPPOSING APPROACH
EING OPPOSED       VOLUMES        % OPPOSING LEFT TURN      # LANES      OPPOSING
                 LT    TH    RT       LT    TH    RT        LT  TH  RT     VOLUME
ASTBOUND          0  1333    39      100   100   100         0   2   0     1372
OUTHBOUND         0     0     0        0     0     0         0   0   0        0

ATURATION FLOW ADJUSTMENT WORKSHEET
IR LN GROUP  IDEAL N  Fwid   Fhv   Fgr Fpark  Fbus Farea   Frt   Flt    s
B  LT-TH      1800 2 1.000 0.990 1.000 0.937 0.996 0.900 1.000 0.537 1608
B  TH-RT      1800 2 1.033 0.990 1.000 1.000 0.998 0.900 0.996 1.000 3294
B  LT         1800 1 1.000 0.990 1.000 1.000 1.000 0.900 1.000 0.950 1524
B  RT         1800 1 1.000 0.990 1.000 1.000 1.000 0.900 0.850 1.000 1363

JPPLEMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
NPUT VARIABLES
IR  C   G  N   Va   Vm  Vlt  Plt No   Vo Plto
B  86  65  2 1629 1399  136 0.08  2 1372 0.00
ALCULATIONS
IR Sop    Yo     Gu     Fs     Pl      Gq     Pt     Gf        El     Fm   Flt
B 3600 0.381 52.063 0.017 1.000 12.937 0.000  0.000    65.077 0.074 0.537
```

```
DIR LN GROUP      v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH      1710 1608 1.06 0.76 1215 1.41     *
WB  TH-RT      1441 3294 0.44 0.76 2489 0.58
SB  LT            8 1524 0.00 0.17  266 0.03
SB  RT           19 1363 0.01 0.17  238 0.08     *

CYCLE= 86.0  LOST= 6.0  SUM V/S CRIT= 1.08 TOTAL V/C= 1.16

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C     d1      c      d2    PF    Delay LOS Avg Q  95%
EB  LT-TH     1.41 0.76  86.0 %1948.60 1215   287.05 0.85 1900.30  F 864.
WB  TH-RT     0.58 0.76  86.0   3.46 2489     0.25 0.85    3.16  A   8.0
SB  LT        0.03 0.17  86.0  22.38  266     0.00 1.00   22.38  C   0.1
SB  RT        0.08 0.17  86.0  22.58  238     0.00 0.85   19.20  C   0.4

DIR Delay LOS
EB %1900.30  F
WB   3.16  A
SB  20.11  C
INTERSECTION DELAY =%1024.45 INTERSECTION LOS=F

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

THE V/C RATIO CAN'T BE .95 FOR THE GIVEN CONDITIONS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -5.9 secs yellow + red clea
suggested timing phase 2 is   0.0 secs green,  -0.1 secs yellow + red clea
```

```
85 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
YLSTON/IPSWICH
 PM NO-BUILD
te:11-02-1989               time:17:44:52
ST DATA SET NAMES LOADED OR SAVED
LUME=25PNB      GEOMETRICS=25EXST      SIGNAL=25EXST
CATED IN CBD:Y
LUME & GEOMETRICS
     VOLUMES        # OF LANES      LANE WIDTH      CROSS
R  LT   TH   RT     LT TH RT      LT    TH    RT     WALK
   26 1367    0      0  2  0      0.0 12.0  0.0     48
    0 1021   41      0  2  0      0.0 13.0  0.0     48
    0    0    0      0  0  0      0.0  0.0  0.0      0
  193    0  179      1  0  1     12.0  0.0 12.0      0

AFFIC & ROADWAY CONDITIONS
               ADJ PARK                   PEDESTRIANS         ARR
R GRADE %HV   Y/N MOVES BUSES   PHF CROSS BUT MIN TIME TYPE
  0.0%  2.0%   Y      5     2  .900   30    Y    19.0    3
  0.0%  2.0%   N      0     1  .940   25    Y    19.0    3
  0.0%  0.0%          0     0  .000    0          7.0    0
  0.0%  2.0%   N      0     0  .800   20    Y     7.0    3

ASINGS
  EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
  l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
  *  *           *  *                             65.0   0    A
                                      *     *     15.0   0    A

CLE=  86.0

LUME ADJUSTMENT WORKSHEET
RT 1 (MOVEMENT ADJUSTMENTS)
R  LTV  THV  RTV   PHF  LTFR THFR RTFR
3   26 1367    0  .900    29 1519    0
3    0 1021   41  .940     0 1086   44
3    0    0    0  .000     0    0    0
3  193    0  179  .800   241    0  224

RT 2 (LANE GROUP ADJUSTMENTS)
R LN GROUP    FLOW N   LU    v  Plt  Prt
3  LT-TH      1548 2 1.05 1625 0.02 0.00
3  TH-RT      1130 2 1.05 1186 0.00 0.04
3  LT          241 1 1.00  241 1.00 0.00
3  RT          224 1 1.00  224 0.00 1.00

RT 3 (OPPOSING VOLUME ADJUSTMENTS)
EFT TURN                 OPPOSING APPROACH
EING OPPOSED       VOLUMES       % OPPOSING LEFT TURN      # LANES     OPPOSING
                 LT   TH   RT        LT   TH   RT        LT  TH  RT     VOLUME
ASTBOUND          0 1086   44       100  100  100         0   2   0     1130
UTHBOUND          0    0    0         0    0    0         0   0   0        0

TURATION FLOW ADJUSTMENT WORKSHEET
R LN GROUP   IDEAL N  Fwid   Fhv   Fgr Fpark  Fbus Farea   Frt   Flt    s
3  LT-TH      1800  2 1.000 0.990 1.000 0.937 0.996 0.900 1.000 0.837 2506
3  TH-RT      1800  2 1.033 0.990 1.000 1.000 0.998 0.900 0.994 1.000 3289
3  LT         1800  1 1.000 0.990 1.000 1.000 1.000 0.900 1.000 0.950 1524
3  RT         1800  1 1.000 0.990 1.000 1.000 1.000 0.900 0.850 1.000 1363

PPLEMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
PUT VARIABLES
R  C   G  N   Va   Vm  Vlt  Plt No   Vo Plto
3 86  65  2 1548 1399   29 0.02  2 1130 0.00
LCULATIONS
R Sop    Yo     Gu     Fs    Pl     Gq    Pt     Gf       El    Fm   Flt
3 3600 0.314 55.395 0.169 0.106  9.605 0.894  7.015    6.661 0.674 0.837
```

```
DIR LN GROUP     v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH     1625 2506 0.65 0.76 1894 0.86      *
WB  TH-RT     1186 3289 0.36 0.76 2486 0.48
SB  LT         241 1524 0.16 0.17  266 0.91
SB  RT         224 1363 0.16 0.17  238 0.94      *

CYCLE= 86.0  LOST= 6.0  SUM V/S CRIT= 0.81 TOTAL V/C= 0.87

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C      d1     c      d2   PF   Delay LOS Avg Q
EB  LT-TH     0.86 0.76  86.0   5.54 1894    3.00 0.85    7.26  B    9.0
WB  TH-RT     0.48 0.76  86.0   3.05 2486    0.12 0.85    2.69  A    6.6
SB  LT        0.91 0.17  86.0  26.46  266   22.67 1.00   49.14  E    5.7
SB  RT        0.94 0.17  86.0  26.65  238   30.54 0.85   48.61  E    5.2

DIR Delay LOS
EB   7.26  B
WB   2.69  A
SB  48.88  E
INTERSECTION DELAY = 11.51 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  41.5 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -4.8 secs yellow + red clear
suggested timing phase 2 is   0.0 secs green,  -1.2 secs yellow + red clear
```

```
5 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
 NO-BUILD AM
GWOOD/CHAPEL
e:11-13-1989               time:15:57:29
T DATA SET NAMES LOADED OR SAVED
UME=26ANB       GEOMETRICS=26EXST     SIGNAL=26SIG
ATED IN CBD:Y
UME & GEOMETRICS
     VOLUMES        # OF LANES      LANE WIDTH      CROSS
  LT    TH    RT    LT TH RT      LT    TH    RT    WALK
   24   493     0     0  1  0     0.0 15.0   0.0    24
    0   235   396     0  1  1     0.0 11.0 11.0     46
    0     0     0     0  0  0     0.0  0.0   0.0     0
  146     0    16     1  0  1    10.0  0.0 10.0     32

AFFIC & ROADWAY CONDITIONS
                ADJ PARK               PEDESTRIANS        ARR
 GRADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
 0.0%  1.0%   N      0     0  .850   10   N     18.5    3
 0.0%  1.0%   N      0     0  .850   10         18.5    3
 0.0%  0.0%          0     0  .000    0         12.0    0
 0.0%  0.0%   Y      3     0  .850   75   Y     12.0    3

ASINGS
 EASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
 l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 *  *           *  *                          *  47.0   0    P
                                     *     *     20.0   0    A

LE=  73.0

UME ADJUSTMENT WORKSHEET
T 1 (MOVEMENT ADJUSTMENTS)
  LTV  THV  RTV   PHF   LTFR THFR RTFR
   24  493    0  .850    28  580    0
    0  235  396  .850     0  276  466
    0    0    0  .000     0    0    0
  146    0   16  .850   172    0   19

T 2 (LANE GROUP ADJUSTMENTS)
 LN GROUP   FLOW N   LU     v  Plt  Prt
 LT-TH       608 1 1.00   608 0.05 0.00
 TH          276 1 1.00   276 0.00 0.00
 RT          466 1 1.00   466 0.00 1.00
 LT          172 1 1.00   172 1.00 0.00
 RT           19 1 1.00    19 0.00 1.00

T 3 (OPPOSING VOLUME ADJUSTMENTS)
T TURN                 OPPOSING APPROACH
ING OPPOSED       VOLUMES        % OPPOSING LEFT TURN     # LANES       OPPOSING
              LT    TH    RT        LT    TH    RT       LT  TH  RT      VOLUME
STBOUND        0   276   466       100   100     0        0   1   1       276
THBOUND        0     0     0         0     0     0        0   0   0         0

TURATION FLOW ADJUSTMENT WORKSHEET
 LN GROUP   IDEAL N  Fwid   Fhv   Fgr  Fpark  Fbus  Farea  Frt   Flt      s
 LT-TH      1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1773
 TH         1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1558
 RT         1800  1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 1269
 LT         1800  1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 1436
 RT         1800  1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 1137
```

```
CALCULATIONS
DIR Sop    Yo      Gu      Fs     Pl      Gq     Pt      Gf         El     Fm    F
EB 1800 0.154 42.282 0.702 0.046  4.718 0.954  4.358     1.602 1.000 1.0

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP     v     s  v/s  g/C    c  v/c  CRITICAL
EB  LT-TH      608 1773 0.34 0.64 1142 0.53
WB  TH         276 1558 0.18 0.64 1003 0.28
WB  RT         466 1269 0.37 0.64  817 0.57      *
SB  LT         172 1436 0.12 0.27  394 0.44      *
SB  RT          19 1137 0.02 0.27  312 0.06

CYCLE= 73.0  LOST= 6.0  SUM V/S CRIT= 0.49 TOTAL V/C= 0.53

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C      d1     c       d2   PF   Delay LOS Avg Q
EB  LT-TH     0.53 0.64  73.0    5.36 1142    0.39 1.00    5.75  B    4.4
WB  TH        0.28 0.64  73.0    4.28 1003    0.04 1.00    4.32  A    2.0
WB  RT        0.57 0.64  73.0    5.56  817    0.72 1.00    6.28  B    3.4
SB  LT        0.44 0.27  73.0   16.61  394    0.51 1.00   17.12  C    2.5
SB  RT        0.06 0.27  73.0   14.87  312    0.00 1.00   14.87  B    0.3

DIR Delay LOS
EB   5.75  B
WB   5.55  B
SB  16.90  C
INTERSECTION DELAY =  7.03 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  12.3 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -4.5 secs yellow + red c
suggested timing phase 2 is   0.0 secs green,  -1.5 secs yellow + red c
```

```
5 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
NO-BUILD PM
GWOOD/CHAPEL
e:11-13-1989                time:15:58:13
T DATA SET NAMES LOADED OR SAVED
UME=26PNB       GEOMETRICS=26EXST       SIGNAL=26SIG
ATED IN CBD:Y
UME & GEOMETRICS
     VOLUMES        # OF LANES      LANE WIDTH       CROSS
  LT   TH    RT     LT TH RT      LT    TH    RT     WALK
  22  362     0      0  1  0      0.0 15.0   0.0     24
   0  565   346      0  1  1      0.0 11.0  11.0     46
   0    0     0      0  0  0      0.0  0.0   0.0      0
 326    0    27      1  0  1     10.0  0.0  10.0     32

FFIC & ROADWAY CONDITIONS
              ADJ PARK                  PEDESTRIANS          ARR
 GRADE %HV    Y/N MOVES BUSES   PHF  CROSS BUT MIN TIME TYPE
 0.0%  1.0%    N      0     0   .850   10    N     18.5     3
 0.0%  1.0%    N      0     0   .850   10          18.5     3
 0.0%  0.0%           0     0   .000    0          12.0     0
 0.0%  0.0%    Y      3     0   .850   75    Y     12.0     3

SINGS
 EASTBOUND    WESTBOUND    NORTHBOUND   SOUTHBOUND GREEN   Y+R PRE/ACT
 l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 *  *           *  *                           *  47.0    0     P
                                    *     *      20.0    0     A

LE=  73.0

UME ADJUSTMENT WORKSHEET
 1 (MOVEMENT ADJUSTMENTS)
  LTV  THV  RTV    PHF  LTFR THFR RTFR
   22  362    0  .850    26  426    0
    0  565  346  .850     0  665  407
    0    0    0  .000     0    0    0
  326    0   27  .850   384    0   32

 2 (LANE GROUP ADJUSTMENTS)
 LN GROUP   FLOW N    LU     v  Plt  Prt
 LT-TH       452 1 1.00   452 0.06 0.00
 TH          665 1 1.00   665 0.00 0.00
 RT          407 1 1.00   407 0.00 1.00
 LT          384 1 1.00   384 1.00 0.00
 RT           32 1 1.00    32 0.00 1.00

 3 (OPPOSING VOLUME ADJUSTMENTS)
 TURN                    OPPOSING APPROACH
G OPPOSED          VOLUMES        % OPPOSING LEFT TURN      # LANES      OPPOSING
               LT    TH    RT        LT    TH    RT        LT  TH  RT     VOLUME
BOUND           0   665   407       100   100     0         0   1   1      665
HBOUND          0     0     0         0     0     0         0   0   0        0

RATION FLOW ADJUSTMENT WORKSHEET
 LN GROUP  IDEAL N  Fwid   Fhv    Fgr  Fpark  Fbus  Farea   Frt    Flt    s
 LT-TH      1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 0.923 1636
 TH         1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1558
 RT         1800  1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 1269
 LT         1800  1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 1436
 RT         1800  1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 1137
```

```
CALCULATIONS
DIR Sop    Yo     Gu     Fs     Pl      Gq     Pt     Gf         El     Fm    Flt
EB 1800 0.369 31.777 0.460 0.057 15.223 0.943 11.906      2.448 0.923 0.923

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP     v    s  v/s  g/C    c  v/c  CRITICAL
EB  LT-TH      452 1636 0.28 0.64 1053 0.43
WB  TH         665 1558 0.43 0.64 1003 0.66      *
WB  RT         407 1269 0.32 0.64  817 0.50
SB  LT         384 1436 0.27 0.27  394 0.97      *
SB  RT          32 1137 0.03 0.27  312 0.10

CYCLE= 73.0  LOST= 6.0  SUM V/S CRIT= 0.69 TOTAL V/C= 0.76

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C     d1     c     d2   PF   Delay LOS Avg Q  95%
EB  LT-TH    0.43 0.64  73.0   4.86 1053   0.18 1.00   5.04  B    3.3
WB  TH       0.66 0.64  73.0   6.14 1003   1.16 1.00   7.30  B    4.8
WB  RT       0.50 0.64  73.0   5.18  817   0.41 1.00   5.59  B    2.9
SB  LT       0.97 0.27  73.0  19.95  394  28.80 1.00  48.74  E    8.0
SB  RT       0.10 0.27  73.0  15.04  312   0.01 1.00  15.05  C    0.5

DIR Delay LOS
EB   5.04  B
WB   6.65  B
SB  46.17  E
INTERSECTION DELAY = 14.74 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  22.2 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -3.7 secs yellow + red clea
suggested timing phase 2 is   0.0 secs green,  -2.3 secs yellow + red clea
```

```
NH PROGRAM VERSION DATE 4-29-1988
B HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
YSTON/IPSWICH
 M EXISTING
:11-05-1989            time:15:24:58
ST DATA SET NAMES LOADED OR SAVED
LME=25AB       GEOMETRICS=25EXST     SIGNAL=25EXST
CTED IN CBD:Y
LME & GEOMETRICS
     VOLUMES      # OF LANES     LANE WIDTH     CROSS
R LT   TH   RT    LT TH RT      LT   TH   RT    WALK
 122 1338    0     0  2  0     0.0 12.0  0.0    48
   0 1433   37     0  2  0     0.0 13.0  0.0    48
   0    0    0     0  0  0     0.0  0.0  0.0     0
   6    0   15     1  0  1    12.0  0.0 12.0     0

AFIC & ROADWAY CONDITIONS
              ADJ PARK                     PEDESTRIANS       ARR
R GRADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
 0.0%  2.0%   Y     5     2   .900   30   Y    19.0    3
 0.0%  2.0%   N     0     1   .940   25   Y    19.0    3
 0.0%  0.0%         0     0   .000    0         7.0    0
 0.0%  2.0%   N     0     0   .800   20   Y     7.0    3

ASINGS
EASTBOUND   WESTBOUND   NORTHBOUND   SOUTHBOUND GREEN  Y+R PRE/ACT
l t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
* *            *  *                              65.0   3    A
                                    *     *      15.0   3    A

E=  86.0

LME ADJUSTMENT WORKSHEET
RT 1 (MOVEMENT ADJUSTMENTS)
R LTV  THV   RTV    PHF   LTFR THFR RTFR
  122 1338     0   .900    136 1487    0
    0 1433    37   .940      0 1524   39
    0    0     0   .000      4    0    0
    6    0    15   .800      8    0   19

RT 2 (LANE GROUP ADJUSTMENTS)
R LN GROUP    FLOW N    LU    v   Plt  Prt
 LT-TH        1622 2 1.05 1703 0.08 0.00
 TH-RT        1564 2 1.05 1642 0.00 0.03
 LT              8 1 1.00    8 1.00 0.00
 RT             19 1 1.00   19 0.00 1.00

RT 3 (OPPOSING VOLUME ADJUSTMENTS)
FT TURN                  OPPOSING APPROACH
ING OPPOSED        VOLUMES        % OPPOSING LEFT TURN      # LANES      OPPOSING
              LT   TH   RT        LT   TH   RT          LT  TH  RT      VOLUME
STBOUND        0 1524   39       100  100  100           0   2   0       1399
UTHBOUND       4    0    0         0    0    0           0   0   0          0

TRATION FLOW ADJUSTMENT WORKSHEET
R LN GROUP    IDEAL N  Fwid   Fhv    Fgr  Fpark  Fbus  Farea   Frt    Flt     s
 LT-TH        1800  2 1.000 0.990 1.000 0.937 0.996 0.900 1.000 0.531 1590
 TH-RT        1800  2 1.033 0.990 1.000 1.000 0.998 0.900 0.996 1.000 3295
 LT           1800  1 1.000 0.990 1.000 1.000 1.000 0.900 1.000 0.950 1524
 RT           1800  1 1.000 0.990 1.000 1.000 1.000 0.900 0.850 1.000 1363
```

```
SUPPLEMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
INPUT VARIABLES
DIR  C   G  N   Va   Vm  Vlt  Plt No   Vo Plto
EB  86  65  2 1622 1399  136 0.08  2 1399 0.00
CALCULATIONS
DIR Sop    Yo     Gu     Fs     Pl     Gq    Pt     Gf        El     Fm   Flt
EB 3600 0.389 51.652 0.001 1.000 13.348 0.000  0.000 1800.000 0.062 0.531

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP    v    s  v/s  g/C    c  v/c  CRITICAL
EB  LT-TH     1703 1590 1.07 0.76 1202 1.42     *
WB  TH-RT     1642 3295 0.50 0.76 2491 0.66
SB  LT           8 1524 0.00 0.17  266 0.03
SB  RT          19 1363 0.01 0.17  238 0.08     *

CYCLE= 86.0  LOST= 6.0  SUM V/S CRIT= 1.09 TOTAL V/C= 1.17

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C   C      d1     c      d2    PF   Delay LOS Avg Q  95%Q
EB  LT-TH     1.42 0.76  86.0 %1948.60 1202   297.94 0.85 1909.57  F 865.2
WB  TH-RT     0.66 0.76  86.0   3.88 2491     0.46 0.85    3.69  A   9.1
SB  LT        0.03 0.17  86.0  22.38  266     0.00 1.00   22.38  C   0.1
SB  RT        0.08 0.17  86.0  22.58  238     0.00 0.85   19.20  C   0.4

DIR Delay LOS
EB %1909.57  F
WB   3.69  A
SB  20.11  C
INTERSECTION DELAY =966.67 INTERSECTION LOS=F

THE CYCLE LENGTH WITHIN THE BOUNDS OF  150  TO  50 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS  50.0 SECONDS

THE V/C RATIO CAN'T BE .95 FOR THE GIVEN CONDITIONS
for chosen cycle length  50.0
suggested timing phase 1 is  43.4 secs green,   3.0 secs yellow + red clea
suggested timing phase 2 is   0.6 secs green,   3.0 secs yellow + red clea
```

```
HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
TON/IPSWICH
 BUILD
11-02-1989                time:18:30:17
DATA SET NAMES LOADED OR SAVED
E=25PB        GEOMETRICS=25EXST      SIGNAL=25EXST
ED IN CBD:Y
E & GEOMETRICS
   VOLUMES        # OF LANES      LANE WIDTH      CROSS
 LT   TH   RT     LT  TH  RT      LT   TH    RT    WALK
 26 1531    0      0   2   0     0.0 12.0   0.0    48
  0 1014   41      0   2   0     0.0 13.0   0.0    48
  0    0    0      0   0   0     0.0  0.0   0.0     0
 45    0  179      1   0   1    12.0  0.0  12.0     0

IC & ROADWAY CONDITIONS
           ADJ PARK                 PEDESTRIANS       ARR
RADE %HV    Y/N MOVES BUSES   PHF CROSS BUT MIN TIME TYPE
 .0%  2.0%   Y     5     2   .900   30   Y     19.0    3
 .0%  2.0%   N     0     1   .940   25   Y     19.0    3
 .0%  0.0%         0     0   .000    0          7.0    0
 .0%  2.0%   N     0     0   .800   20   Y      7.0    3

NGS
ASTBOUND   WESTBOUND   NORTHBOUND   SOUTHBOUND GREEN   Y+R PRE/ACT
  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
  *            *  *                              67.0    0     A
                                    *     *      19.0    0     A

=  92.0

E ADJUSTMENT WORKSHEET
1 (MOVEMENT ADJUSTMENTS)
LTV  THV  RTV   PHF  LTFR THFR RTFR
  26 1531    0 .900    29 1701    0
   0 1014   41 .940     0 1079   44
   0    0    0 .000     0    0    0
245    0  179 .800   306    0  224

2 (LANE GROUP ADJUSTMENTS)
N GROUP  FLOW N   LU    v  Plt  Prt
T-TH     1730 2 1.05 1817 0.02 0.00
H-RT     1122 2 1.05 1178 0.00 0.04
T         306 1 1.00  306 1.00 0.00
T         224 1 1.00  224 0.00 1.00

3 (OPPOSING VOLUME ADJUSTMENTS)
TURN                   OPPOSING APPROACH
 OPPOSED        VOLUMES        % OPPOSING LEFT TURN     # LANES      OPPOSING
             LT   TH    RT         LT   TH   RT        LT  TH  RT     VOLUME
OUND          0 1079    44        100  100  100         0   2   0     1122
BOUND         0    0     0          0    0    0         0   0   0        0

ATION FLOW ADJUSTMENT WORKSHEET
N GROUP  IDEAL N  Fwid   Fhv   Fgr Fpark  Fbus Farea   Frt   Flt    s
T-TH     1800  2 1.000 0.990 1.000 0.937 0.996 0.900 1.000 0.850 2545
H-RT     1800  2 1.033 0.990 1.000 1.000 0.998 0.900 0.994 1.000 3289
T        1800  1 1.000 0.990 1.000 1.000 1.000 0.900 1.000 0.950 1524
T        1800  1 1.000 0.990 1.000 1.000 1.000 0.900 0.850 1.000 1363

EMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
 VARIABLES
C   G  N   Va   Vm  Vlt  Plt No   Vo Plto
2  67  2 1730 1399   29 0.02  2 1122 0.00
LATIONS
op    Yo     Gu    Fs    Pl     Gq    Pt     Gf      El    Fm   Flt
00 0.312 55.701 0.174 0.096 11.317 0.904  8.202   6.483 0.700 0.850
```

```
DIR LN GROUP      v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH      1817 2545 0.71 0.73 1854 0.98      *
WB  TH-RT      1178 3289 0.36 0.73 2396 0.49
SB  LT          306 1524 0.20 0.21  314 0.97      *
SB  RT          224 1363 0.16 0.21  281 0.80

CYCLE= 92.0  LOST= 6.0  SUM V/S CRIT= 0.91 TOTAL V/C= 0.98

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C   C      d1    c      d2   PF   Delay LOS Avg Q  95
EB  LT-TH     0.98 0.73  92.0   9.00 1854   12.26 0.85  18.08  C  14.7
WB  TH-RT     0.49 0.73  92.0   4.02 2396    0.13 0.85   3.53  A   7.8
SB  LT        0.97 0.21  92.0  27.56  314   32.54 1.00  60.10  F   8.2
SB  RT        0.80 0.21  92.0  26.35  281    9.91 0.85  30.82  D   4.5

DIR Delay LOS
EB  18.08  C
WB   3.53  A
SB  47.74  E
INTERSECTION DELAY = 17.67 INTERSECTION LOS=C

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE 161.2 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -4.7 secs yellow + red cle
suggested timing phase 2 is   0.0 secs green,  -1.3 secs yellow + red cle
```

```
 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
JILD AM
VOOD/CHAPEL
:11-13-1989              time:15:58:48
 DATA SET NAMES LOADED OR SAVED
IE=26AB       GEOMETRICS=26EXST      SIGNAL=26SIG
TED IN CBD:Y
IE & GEOMETRICS
    VOLUMES        # OF LANES       LANE WIDTH       CROSS
 LT    TH    RT     LT  TH  RT      LT    TH    RT     WALK
 24   503     0      0   1   0      0.0  15.0   0.0     24
  0   235   396      0   1   1      0.0  11.0  11.0     46
  0     0     0      0   0   0      0.0   0.0   0.0      0
.46     0    16      1   0   1     10.0   0.0  10.0     32

'IC & ROADWAY CONDITIONS
              ADJ PARK                    PEDESTRIANS         ARR
RADE  %HV    Y/N MOVES  BUSES   PHF  CROSS  BUT  MIN TIME  TYPE
.0%   1.0%    N      0      0   .850    10    N     18.5      3
.0%   1.0%    N      0      0   .850    10          18.5      3
.0%   0.0%           0      0   .000     0          12.0      0
.0%   0.0%    Y      3      0   .850    75    Y     12.0      3

NGS
ASTBOUND     WESTBOUND     NORTHBOUND     SOUTHBOUND  GREEN    Y+R  PRE/ACT
  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
  *              *  *                          *   47.0     0     P
                                      *     *      20.0     0     A

=  73.0

E ADJUSTMENT WORKSHEET
1 (MOVEMENT ADJUSTMENTS)
LTV   THV   RTV    PHF   LTFR  THFR  RTFR
  24   503     0   .850     28   592     0
   0   235   396   .850      0   276   466
   0     0     0   .000      0     0     0
146     0    16   .850    172     0    19

2 (LANE GROUP ADJUSTMENTS)
N GROUP   FLOW  N    LU     v   Plt   Prt
T-TH       620  1  1.00   620  0.05  0.00
H          276  1  1.00   276  0.00  0.00
T          466  1  1.00   466  0.00  1.00
T          172  1  1.00   172  1.00  0.00
T           19  1  1.00    19  0.00  1.00

3 (OPPOSING VOLUME ADJUSTMENTS)
TURN                   OPPOSING APPROACH
 OPPOSED         VOLUMES        % OPPOSING LEFT TURN      # LANES        OPPOSING
             LT    TH    RT          LT    TH    RT        LT   TH   RT      VOLUME
OUND          0   276   466         100   100     0         0    1    1       276
BOUND         0     0     0           0     0     0         0    0    0         0

ATION FLOW ADJUSTMENT WORKSHEET
N GROUP    IDEAL N   Fwid    Fhv    Fgr  Fpark  Fbus  Farea    Frt    Flt     s
T-TH       1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1773
H          1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1558
T          1800  1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 1269
T          1800  1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 1436
T          1800  1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 1137
```

```
CALCULATIONS
DIR Sop    Yo     Gu     Fs     Pl      Gq     Pt     Gf        El     Fm    Flt
EB 1800 0.154 42.282 0.702 0.046  4.718 0.954  4.365     1.602 1.000 1.000

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP     v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH      620 1773 0.35 0.64 1142 0.54
WB  TH         276 1558 0.18 0.64 1003 0.28
WB  RT         466 1269 0.37 0.64  817 0.57      *
SB  LT         172 1436 0.12 0.27  394 0.44      *
SB  RT          19 1137 0.02 0.27  312 0.06

CYCLE= 73.0  LOST= 6.0  SUM V/S CRIT= 0.49 TOTAL V/C= 0.53

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C      d1    c      d2   PF    Delay LOS Avg Q  95
EB  LT-TH    0.54 0.64  73.0   5.41 1142    0.42 1.00    5.83  B    4.5
WB  TH       0.28 0.64  73.0   4.28 1003    0.04 1.00    4.32  A    2.0
WB  RT       0.57 0.64  73.0   5.56  817    0.72 1.00    6.28  B    3.4
SB  LT       0.44 0.27  73.0  16.61  394    0.51 1.00   17.12  C    2.5
SB  RT       0.06 0.27  73.0  14.87  312    0.00 1.00   14.87  B    0.3

DIR Delay LOS
EB   5.83  B
WB   5.55  B
SB  16.90  C
INTERSECTION DELAY =  7.06 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  12.3 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -4.5 secs yellow + red cle
suggested timing phase 2 is   0.0 secs green,  -1.5 secs yellow + red cle
```

```
LATIONS
op     Yo      Gu     Fs     Pl      Gq     Pt      Gf         El     Fm    Flt
00 0.376 31.346 0.452 0.057 15.654 0.943 12.171    2.488 0.918 0.918

ITY ANALYSIS WORKSHEET
N GROUP      v     s  v/s  g/C     c  v/c  CRITICAL
T-TH       452  1629 0.28 0.64 1049 0.43
H          676  1558 0.43 0.64 1003 0.67      *
T          407  1269 0.32 0.64  817 0.50
T          384  1436 0.27 0.27  394 0.97      *
T           31  1137 0.03 0.27  312 0.10

= 73.0  LOST= 6.0  SUM V/S CRIT= 0.70 TOTAL V/C= 0.76

 OF SERVICE WORKSHEET
N GROUP  v/c  g/C    C      d1     c       d2   PF   Delay LOS Avg Q  95% Q
T-TH     0.43 0.64  73.0   4.87 1049     0.18 1.00    5.05  B    3.3
H        0.67 0.64  73.0   6.22 1003     1.27 1.00    7.49  B    4.9
T        0.50 0.64  73.0   5.18  817     0.41 1.00    5.59  B    2.9
T        0.97 0.27  73.0  19.95  394    28.80 1.00   48.74  E    8.0
T        0.10 0.27  73.0  15.03  312     0.00 1.00   15.03  C    0.5

elay LOS
5.05  B
6.78  B
6.25  E
SECTION DELAY = 14.76 INTERSECTION LOS=B

YCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
 MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

 V/C RATIO OF .95 THE CYCLE SHOULD BE  22.9 SECONDS
hosen cycle length   0.0
sted timing phase 1 is   0.0 secs green,  -3.7 secs yellow + red clear
sted timing phase 2 is   0.0 secs green,  -2.3 secs yellow + red clear
```

```
1985 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
95 BUILD PM
LONGWOOD/CHAPEL
date:11-13-1989             time:15:59:37
LAST DATA SET NAMES LOADED OR SAVED
VOLUME=26PB      GEOMETRICS=26EXST      SIGNAL=26SIG
LOCATED IN CBD:Y
VOLUME & GEOMETRICS
       VOLUMES        # OF LANES      LANE WIDTH      CROSS
DIR   LT   TH   RT    LT TH RT     LT    TH    RT     WALK
EB    22  362    0     0  1  0     0.0 15.0   0.0     24
WB     0  575  346     0  1  1     0.0 11.0  11.0     46
NB     0    0    0     0  0  0     0.0  0.0   0.0      0
SB   326    0   26     1  0  1    10.0  0.0  10.0     32

TRAFFIC & ROADWAY CONDITIONS
                  ADJ PARK                  PEDESTRIANS        ARR
DIR GRADE  %HV    Y/N MOVES BUSES   PHF CROSS BUT MIN TIME TYPE
EB  0.0%  1.0%     N     0     0   .850   10   N     18.5     3
WB  0.0%  1.0%     N     0     0   .850   10         18.5     3
NB  0.0%  0.0%           0     0   .000    0         12.0     0
SB  0.0%  0.0%     Y     3     0   .850   75   Y     12.0     3

PHASINGS
   EASTBOUND   WESTBOUND   NORTHBOUND   SOUTHBOUND GREEN   Y+R PRE/ACT
   l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 1 *  *              *  *                       *  47.0    0     P
 2                                      *     *    20.0    0     A

CYCLE=  73.0

VOLUME ADJUSTMENT WORKSHEET
PART 1 (MOVEMENT ADJUSTMENTS)
DIR  LTV  THV  RTV   PHF  LTFR THFR RTFR
EB    22  362    0  .850    26  426    0
WB     0  575  346  .850     0  676  407
NB     0    0    0  .000     0    0    0
SB   326    0   26  .850   384    0   31

PART 2 (LANE GROUP ADJUSTMENTS)
DIR LN GROUP  FLOW N   LU     v  Plt  Prt
EB  LT-TH      452 1 1.00   452 0.06 0.00
WB  TH         676 1 1.00   676 0.00 0.00
WB  RT         407 1 1.00   407 0.00 1.00
SB  LT         384 1 1.00   384 1.00 0.00
SB  RT          31 1 1.00    31 0.00 1.00

PART 3 (OPPOSING VOLUME ADJUSTMENTS)
LEFT TURN                 OPPOSING APPROACH
BEING OPPOSED        VOLUMES       % OPPOSING LEFT TURN     # LANES      OPPOIN
                   LT   TH   RT        LT    TH    RT      LT  TH  RT     VOLME
EASTBOUND           0  676  407       100   100     0       0   1   1      67
SOUTHBOUND          0    0    0         0     0     0       0   0   0

SATURATION FLOW ADJUSTMENT WORKSHEET
DIR LN GROUP  IDEAL N  Fwid   Fhv    Fgr  Fpark  Fbus  Farea   Frt    Flt
EB  LT-TH     1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 0.918 162
WB  TH        1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 155
WB  RT        1800  1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 126
SB  LT        1800  1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 143
SB  RT        1800  1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 113
```

```
 PROGRAM VERSION DATE 4-29-1988
 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
 TON/IPSWICH
 EXISTING
 11-05-1989             time:15:31:08
 DATA SET NAMES LOADED OR SAVED
 E=25AB        GEOMETRICS=25EXST     SIGNAL=25AB
 ED IN CBD:Y
 E & GEOMETRICS
   VOLUMES       # OF LANES      LANE WIDTH      CROSS
 LT   TH   RT     LT TH RT      LT   TH   RT     WALK
 22 1338    0      0  2  0     0.0 12.0  0.0     48
  0 1433   37      0  2  0     0.0 13.0  0.0     48
  0    0    0      0  0  0     0.0  0.0  0.0      0
  6    0   15      1  0  1    12.0  0.0 12.0      0

 IC & ROADWAY CONDITIONS
            ADJ PARK                PEDESTRIANS       ARR
 RADE %HV   Y/N MOVES BUSES  PHF  CROSS BUT MIN TIME TYPE
 .0%  2.0%   Y     5    2   .900   30    Y    19.0    3
 .0%  2.0%   N     0    1   .940   25    Y    19.0    3
 .0%  0.0%         0    0   .000    0          7.0    0
 .0%  2.0%   N     0    0   .800   20    Y     7.0    3

 NGS
 ASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
  *           *  *                              75.0   3    A
                                    *     *      2.0   3    A

 =  83.0

 E ADJUSTMENT WORKSHEET
 1 (MOVEMENT ADJUSTMENTS)
 LTV  THV  RTV   PHF  LTFR THFR RTFR
 122 1338    0  .900   136 1487    0
   0 1433   37  .940     0 1524   39
   0    0    0  .000     4    0    0
   6    0   15  .800     8    0   19

 2 (LANE GROUP ADJUSTMENTS)
 N GROUP  FLOW N   LU    v  Plt  Prt
 T-TH     1622 2 1.05 1703 0.08 0.00
 H-RT     1564 2 1.05 1642 0.00 0.03
 T           8 1 1.00    8 1.00 0.00
 T          19 1 1.00   19 0.00 1.00

 3 (OPPOSING VOLUME ADJUSTMENTS)
 TURN                OPPOSING APPROACH
  OPPOSED       VOLUMES      % OPPOSING LEFT TURN     # LANES      OPPOSING
            LT   TH   RT        LT   TH   RT        LT  TH  RT     VOLUME
 OUND        0 1524   39       100  100  100         0   2   0      1399
 BOUND       4    0    0         0    0    0         0   0   0         0

 ATION FLOW ADJUSTMENT WORKSHEET
 N GROUP  IDEAL N  Fwid    Fhv   Fgr Fpark  Fbus Farea   Frt   Flt    s
 T-TH     1800  2 1.000 0.990 1.000 0.937 0.996 0.900 1.000 0.527 1578
 H-RT     1800  2 1.033 0.990 1.000 1.000 0.998 0.900 0.996 1.000 3295
 T        1800  1 1.000 0.990 1.000 1.000 1.000 0.900 1.000 0.950 1524
 T        1800  1 1.000 0.990 1.000 1.000 1.000 0.900 0.850 1.000 1363
```

```
SUPPLEMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
INPUT VARIABLES
DIR  C   G  N   Va   Vm  Vlt  Plt No   Vo Plto
EB  83  75  2 1622 1399  136 0.08  2 1399 0.00
CALCULATIONS
DIR Sop    Yo     Gu     Fs     Pl      Gq     Pt      Gf        El     Fm   Flt
EB 3600 0.389 69.915 0.001 1.000  5.085 0.000  0.000 1800.000 0.054 0.527

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP    v     s  v/s  g/C    c  v/c  CRITICAL
EB  LT-TH     1703 1578 1.08 0.90 1426 1.19      *
WB  TH-RT     1642 3295 0.50 0.90 2978 0.55
SB  LT           8 1524 0.00 0.02   37 0.20
SB  RT          19 1363 0.01 0.02   33 0.57      *

CYCLE= 83.0  LOST= 6.0  SUM V/S CRIT= 1.09 TOTAL V/C= 1.18

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C   C     d1    c      d2   PF   Delay LOS Avg Q  95 Q
EB  LT-TH     1.19 0.90  83.0 293.01 1426  104.09 0.85  337.53  F 153.9
WB  TH-RT     0.55 0.90  83.0   0.58 2978    0.17 0.85    0.64  A   3.5
SB  LT        0.20 0.02  83.0  30.19   37    0.39 1.00   30.58  D   0.2
SB  RT        0.57 0.02  83.0  30.46   33   14.12 0.85   37.89  D   0.4

DIR Delay LOS
EB 337.53  F
WB   0.64  A
SB  35.80  D
INTERSECTION DELAY =171.11 INTERSECTION LOS=F

THE CYCLE LENGTH WITHIN THE BOUNDS OF  40  TO  50 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS  50.0 SECONDS

THE V/C RATIO CAN'T BE .95 FOR THE GIVEN CONDITIONS
for chosen cycle length  50.0
suggested timing phase 1 is  43.4 secs green,   3.0 secs yellow + red cler
suggested timing phase 2 is   0.6 secs green,   3.0 secs yellow + red cler
```

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 CM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS

M BUILD
:1-02-1989             time:18:36:14
 ATA SET NAMES LOADED OR SAVED
M=25PB       GEOMETRICS=25EXST     SIGNAL=25AB
ID IN CBD:R
M & GEOMETRICS
   VOLUMES      # OF LANES     LANE WIDTH     CROSS
 T   TH   RT    LT TH RT      LT   TH   RT    WALK
12 1344    0     0  2  0     0.0 12.0  0.0    48
 0 1392   37     0  2  0     0.0 13.0  0.0    48
 0    0    0     0  0  0     0.0  0.0  0.0     0
 6    0   15     1  0  1    12.0  0.0 12.0     0

FC & ROADWAY CONDITIONS
            ADJ PARK                     PEDESTRIANS        ARR
GADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
00%  2.0%   Y     5    2   .900   30   Y    19.0     3
00%  2.0%   N     0    1   .940   25   Y    19.0     3
00%  0.0%         0    0   .000    0         7.0     0
00%  2.0%   N     0    0   .800   20   Y     7.0     3

IGS
ESTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
l t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
* *           *  *                             77.0   0    A
                                   *     *      2.0   0    A

E  85.0

M ADJUSTMENT WORKSHEET
  (MOVEMENT ADJUSTMENTS)
 TV THV   RTV   PHF  LTFR THFR RTFR
 22 1344    0 .900   136 1493    0
  0 1392   37 .940     0 1481   39
  0    0    0 .000     0    0    0
  6    0   15 .800     8    0   19

  (LANE GROUP ADJUSTMENTS)
L GROUP  FLOW N   LU   v   Plt Prt
L-TH     1629 2 1.05 1710 0.08 0.00
T-RT     1520 2 1.05 1596 0.00 0.03
L           8 1 1.00    8 1.00 0.00
R          19 1 1.00   19 0.00 1.00

  (OPPOSING VOLUME ADJUSTMENTS)
 URN                OPPOSING APPROACH
GOPPOSED       VOLUMES      % OPPOSING LEFT TURN    # LANES     OPPOSING
            LT  TH    RT        LT   TH   RT       LT  TH  RT    VOLUME
BUND         0 1481   39       100  100  100        0   2   0    1399
HOUND        0    0    0         0    0    0        0   0   0       0

RTION FLOW ADJUSTMENT WORKSHEET
L GROUP  IDEAL N  Fwid   Fhv   Fgr Fpark  Fbus Farea   Frt   Flt    s
L-TH     1800  2 1.000 0.990 1.000 0.937 0.996 1.000 1.000 0.526 1751
T-RT     1800  2 1.033 0.990 1.000 1.000 0.998 1.000 0.996 1.000 3661
L        1800  1 1.000 0.990 1.000 1.000 1.000 1.000 1.000 0.950 1693
R        1800  1 1.000 0.990 1.000 1.000 1.000 1.000 0.850 1.000 1515

IMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
TVARIABLES
    G  N   Va   Vm  Vlt  Plt No   Vo Plto
8  77  2 1629 1399  136 0.08  2 1399 0.00
UATIONS
Sp    Yo     Gu    Fs    Pl     Gq    Pt     Gf       El    Fm   Flt
60 0.389 71.915 0.001 1.000  5.085 0.000  0.000 1800.000 0.052 0.526
```

```
DIR LN GROUP      v    s  v/s  g/C    c  v/c  CRITICAL
EB  LT-TH      1710 1751 0.98 0.91 1586 1.08     *
WB  TH-RT      1596 3661 0.44 0.91 3317 0.48
SB  LT            8 1693 0.00 0.02   40 0.19
SB  RT           19 1515 0.01 0.02   36 0.53     *

CYCLE= 85.0  LOST= 6.0  SUM V/S CRIT= 0.99 TOTAL V/C= 1.06

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C     d1    c      d2   PF   Delay LOS Avg Q  9
EB  LT-TH    1.08 0.91  85.0  12.42 1586   42.05 0.85   46.30  E   22.8
WB  TH-RT    0.48 0.91  85.0   0.51 3317    0.09 0.85    0.51  A    3.4
SB  LT       0.19 0.02  85.0  30.93   40    0.28 1.00   31.21  D    0.2
SB  RT       0.53 0.02  85.0  31.18   36    9.81 0.85   34.84  D    0.4

DIR Delay LOS
EB  46.30  E
WB   0.51  A
SB  33.80  D
INTERSECTION DELAY = 24.27 INTERSECTION LOS=C

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

THE V/C RATIO CAN'T BE .95 FOR THE GIVEN CONDITIONS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -5.9 secs yellow + red cl ar
suggested timing phase 2 is   0.0 secs green,  -0.1 secs yellow + red cl ar
```

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 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
UILD AM
WOOD/CHAPEL
:11-13-1989             time:16:33:32
 DATA SET NAMES LOADED OR SAVED
ME=26AB        GEOMETRICS=26EXST     SIGNAL=26AMIT
TED IN CBD:Y
ME & GEOMETRICS
     VOLUMES        # OF LANES      LANE WIDTH      CROSS
 LT    TH    RT     LT  TH  RT      LT    TH    RT      WALK
 24   503     0      0   1   0     0.0  15.0   0.0      24
  0   235   396      0   1   1     0.0  11.0  11.0      46
  0     0     0      0   0   0     0.0   0.0   0.0       0
146     0    16      1   0   1    10.0   0.0  10.0      32

FIC & ROADWAY CONDITIONS
              ADJ PARK                 PEDESTRIANS          ARR
GRADE %HV     Y/N MOVES BUSES   PHF  CROSS  BUT MIN TIME TYPE
).0%  1.0%     N      0     0   .850    10   N     18.5     3
).0%  1.0%     N      0     0   .850    10         18.5     3
).0%  0.0%            0     0   .000     0         12.0     0
).0%  0.0%     Y      3     0   .850    75   Y     12.0     3

NGS
ASTBOUND    WESTBOUND    NORTHBOUND   SOUTHBOUND GREEN   Y+R PRE/ACT
 t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 *             *  *                          *  38.0    0    P
                                   *     *      13.0    0    A

=  57.0

IE ADJUSTMENT WORKSHEET
 1 (MOVEMENT ADJUSTMENTS)
 LTV   THV   RTV    PHF   LTFR THFR RTFR
  24   503     0   .850     28  592    0
   0   235   396   .850      0  276  466
   0     0     0   .000      0    0    0
 146     0    16   .850    172    0   19

 2 (LANE GROUP ADJUSTMENTS)
N GROUP   FLOW N   LU     v   Plt  Prt
T-TH       620 1 1.00   620 0.05 0.00
H          276 1 1.00   276 0.00 0.00
T          466 1 1.00   466 0.00 1.00
T          172 1 1.00   172 1.00 0.00
T           19 1 1.00    19 0.00 1.00

 3 (OPPOSING VOLUME ADJUSTMENTS)
 TURN                  OPPOSING APPROACH
 OPPOSED         VOLUMES        % OPPOSING LEFT TURN      # LANES      OPPOSING
              LT    TH    RT        LT    TH    RT      LT  TH  RT      VOLUME
OUND           0   276   466       100   100     0       0   1   1       276
BOUND          0     0     0         0     0     0       0   0   0         0

ATION FLOW ADJUSTMENT WORKSHEET
N GROUP   IDEAL N  Fwid    Fhv    Fgr  Fpark   Fbus  Farea   Frt    Flt     s
T-TH      1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1773
H         1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1558
T         1800  1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 1269
T         1800  1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 1436
T         1800  1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 1137
```

```
CALCULATIONS
DIR Sop    Yo     Gu     Fs    Pl      Gq    Pt     Gf        El     Fm    Fl
EB 1800 0.154 34.552 0.702 0.046  3.448 0.954  3.236     1.602 1.000 1.00

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP     v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH      620  1773 0.35 0.67  1182 0.52
WB  TH         276  1558 0.18 0.67  1039 0.27
WB  RT         466  1269 0.37 0.67   846 0.55       *
SB  LT         172  1436 0.12 0.23   328 0.52       *
SB  RT          19  1137 0.02 0.23   259 0.07

CYCLE= 57.0  LOST= 6.0  SUM V/S CRIT= 0.49 TOTAL V/C= 0.54

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C   C      d1     c      d2   PF   Delay LOS Avg Q  9
EB  LT-TH    0.52 0.67  57.0   3.70 1182    0.35 1.00   4.05  A    3.3
WB  TH       0.27 0.67  57.0   2.93 1039    0.03 1.00   2.96  A    1.5
WB  RT       0.55 0.67  57.0   3.80  846    0.60 1.00   4.40  A    2.5
SB  LT       0.52 0.23  57.0  14.66  328    1.25 1.00  15.91  C    2.1
SB  RT       0.07 0.23  57.0  13.12  259    0.00 1.00  13.13  B    0.2

DIR Delay LOS
EB   4.05  A
WB   3.87  A
SB  15.63  C
INTERSECTION DELAY =  5.38 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  12.3 SECONDS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -4.5 secs yellow + red c
suggested timing phase 2 is   0.0 secs green,  -1.5 secs yellow + red c
```

```
3 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
 UILD PM
 WOOD/CHAPEL
 :11-13-1989             time:16:35:13
 DATA SET NAMES LOADED OR SAVED
 ME=26PB       GEOMETRICS=26EXST     SIGNAL=26PMIT
 TED IN CBD:Y
 ME & GEOMETRICS
    VOLUMES        # OF LANES      LANE WIDTH      CROSS
  LT    TH    RT     LT TH RT       LT    TH    RT      WALK
  22   362     0      0  1  0      0.0 15.0   0.0      24
   0   575   346      0  1  1      0.0 11.0  11.0      46
   0     0     0      0  0  0      0.0  0.0   0.0       0
 326     0    26      1  0  1     10.0  0.0  10.0      32

 FIC & ROADWAY CONDITIONS
               ADJ PARK                PEDESTRIANS          ARR
 GRADE %HV    Y/N MOVES BUSES   PHF  CROSS  BUT MIN TIME TYPE
 0.0%  1.0%    N      0     0   .850    10    N     18.5     3
 0.0%  1.0%    N      0     0   .850    10          18.5     3
 0.0%  0.0%           0     0   .000     0          12.0     0
 0.0%  0.0%    Y      3     0   .850    75    Y     12.0     3

 INGS
 EASTBOUND    WESTBOUND    NORTHBOUND   SOUTHBOUND GREEN   Y+R PRE/ACT
 l  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 *  *           *  *                          *   43.0    3     P
                                     *     *      26.0    3     A

 E=  75.0

 ME ADJUSTMENT WORKSHEET
  1 (MOVEMENT ADJUSTMENTS)
  LTV   THV   RTV    PHF   LTFR THFR RTFR
   22   362     0  .850     26  426    0
    0   575   346  .850      0  676  407
    0     0     0  .000      0    0    0
  326     0    26  .850    384    0   31

  2 (LANE GROUP ADJUSTMENTS)
 LN GROUP   FLOW N    LU     v   Plt  Prt
 LT-TH       452 1 1.00   452 0.06 0.00
 TH          676 1 1.00   676 0.00 0.00
 RT          407 1 1.00   407 0.00 1.00
 LT          384 1 1.00   384 1.00 0.00
 RT           31 1 1.00    31 0.00 1.00

  3 (OPPOSING VOLUME ADJUSTMENTS)
  TURN                  OPPOSING APPROACH
 G OPPOSED       VOLUMES       % OPPOSING LEFT TURN      # LANES      OPPOSING
              LT    TH    RT        LT    TH    RT       LT  TH  RT      VOLUME
 BOUND         0   676   407       100   100     0        0   1   1        676
 HBOUND        0     0     0         0     0     0        0   0   0          0

 RATION FLOW ADJUSTMENT WORKSHEET
 LN GROUP   IDEAL N  Fwid   Fhv    Fgr  Fpark  Fbus  Farea   Frt    Flt     s
 LT-TH      1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 0.890 1577
 TH         1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1558
 RT         1800  1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 1269
 LT         1800  1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 1436
 RT         1800  1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 1137
```

```
SUPPLEMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
INPUT VARIABLES
DIR  C   G  N   Va   Vm  Vlt  Plt No   Vo Plto
EB  83  75  2 1622 1399  136 0.08  2 1399 0.00
CALCULATIONS
DIR Sop    Yo     Gu     Fs    Pl     Gq    Pt     Gf        El     Fm   Flt
EB 3600 0.389 69.915 0.001 1.000  5.085 0.000  0.000 1800.000 0.054 0.527

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP    v    s  v/s  g/C    c  v/c  CRITICAL
EB  LT-TH     1703 1578 1.08 0.90 1426 1.19     *
WB  TH-RT     1642 3295 0.50 0.90 2978 0.55
SB  LT           8 1524 0.00 0.02   37 0.20
SB  RT          19 1363 0.01 0.02   33 0.57     *

CYCLE= 83.0  LOST= 6.0  SUM V/S CRIT= 1.09 TOTAL V/C= 1.18

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C   C     d1    c     d2    PF   Delay LOS Avg Q  95
EB  LT-TH     1.19 0.90  83.0 293.01 1426  104.09 0.85  337.53  F 153.9
WB  TH-RT     0.55 0.90  83.0   0.58 2978    0.17 0.85    0.64  A   3.5
SB  LT        0.20 0.02  83.0  30.19   37    0.39 1.00   30.58  D   0.2
SB  RT        0.57 0.02  83.0  30.46   33   14.12 0.85   37.89  D   0.4

DIR Delay LOS
EB 337.53  F
WB   0.64  A
SB  35.80  D
INTERSECTION DELAY =171.11 INTERSECTION LOS=F

THE CYCLE LENGTH WITHIN THE BOUNDS OF  40  TO  50 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS  50.0 SECONDS

THE V/C RATIO CAN'T BE .95 FOR THE GIVEN CONDITIONS
for chosen cycle length  50.0
suggested timing phase 1 is  43.4 secs green,   3.0 secs yellow + red cler
suggested timing phase 2 is   0.6 secs green,   3.0 secs yellow + red cler
```

```
[illegible]

M BUILD
11-02-1989                 time:18:36:14
 DATA SET NAMES LOADED OR SAVED
ME=25PB        GEOMETRICS=25EXST      SIGNAL=25AB
TED IN CBD:R
ME & GEOMETRICS
    VOLUMES         # OF LANES      LANE WIDTH      CROSS
 LT    TH    RT     LT TH RT      LT    TH    RT    WALK
 122 1344     0      0  2  0     0.0 12.0   0.0     48
   0 1392    37      0  2  0     0.0 13.0   0.0     48
   0    0     0      0  0  0     0.0  0.0   0.0      0
   6    0    15      1  0  1    12.0  0.0  12.0      0

FIC & ROADWAY CONDITIONS
              ADJ PARK                 PEDESTRIANS          ARR
GRADE %HV    Y/N MOVES BUSES   PHF  CROSS  BUT MIN TIME  TYPE
).0%   2.0%   Y      5     2   .900    30    Y     19.0     3
).0%   2.0%   N      0     1   .940    25    Y     19.0     3
).0%   0.0%          0     0   .000     0           7.0     0
).0%   2.0%   N      0     0   .800    20    Y      7.0     3

INGS
EASTBOUND    WESTBOUND    NORTHBOUND   SOUTHBOUND GREEN   Y+R PRE/ACT
  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
  *           *  *                                 77.0    0    A
                                      *     *       2.0    0    A

=  85.0

ME ADJUSTMENT WORKSHEET
 1 (MOVEMENT ADJUSTMENTS)
 LTV   THV   RTV    PHF   LTFR THFR RTFR
 122 1344     0   .900    136 1493    0
   0 1392    37   .940      0 1481   39
   0    0     0   .000      0    0    0
   6    0    15   .800      8    0   19

 2 (LANE GROUP ADJUSTMENTS)
N GROUP    FLOW N   LU     v   Plt   Prt
T-TH       1629 2 1.05 1710 0.08 0.00
TH-RT      1520 2 1.05 1596 0.00 0.03
T             8 1 1.00    8 1.00 0.00
RT           19 1 1.00   19 0.00 1.00

 3 (OPPOSING VOLUME ADJUSTMENTS)
 TURN                   OPPOSING APPROACH
 OPPOSED          VOLUMES         % OPPOSING LEFT TURN      # LANES       OPPOSING
                LT    TH    RT      LT    TH    RT         LT  TH  RT      VOLUME
BOUND            0 1481    39      100   100   100          0   2   0       1399
IBOUND           0    0     0        0     0     0          0   0   0          0

RATION FLOW ADJUSTMENT WORKSHEET
N GROUP   IDEAL N  Fwid   Fhv    Fgr  Fpark  Fbus  Farea   Frt    Flt     s
T-TH      1800  2 1.000 0.990 1.000 0.937 0.996 1.000 1.000 0.526 1751
H-RT      1800  2 1.033 0.990 1.000 1.000 0.998 1.000 0.996 1.000 3661
T         1800  1 1.000 0.990 1.000 1.000 1.000 1.000 1.000 0.950 1693
T         1800  1 1.000 0.990 1.000 1.000 1.000 1.000 0.850 1.000 1515

EMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
 VARIABLES
 C    G  N   Va    Vm   Vlt  Plt No    Vo Plto
 5   77  2 1629 1399   136 0.08  2 1399 0.00
LATIONS
op    Yo      Gu     Fs     Pl      Gq     Pt     Gf        El     Fm    Flt
00 0.389 71.915 0.001 1.000   5.085 0.000  0.000 1800.000 0.052 0.526
```

```
DIR LN GROUP     v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH     1710 1751 0.98 0.91 1586 1.08     *
WB  TH-RT     1596 3661 0.44 0.91 3317 0.48
SB  LT           8 1693 0.00 0.02   40 0.19
SB  RT          19 1515 0.01 0.02   36 0.53     *

CYCLE= 85.0  LOST= 6.0  SUM V/S CRIT= 0.99 TOTAL V/C= 1.06

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C     d1     c     d2   PF   Delay LOS Avg Q  95%Q
EB  LT-TH     1.08 0.91  85.0  12.42 1586   42.05 0.85   46.30  E  22.8
WB  TH-RT     0.48 0.91  85.0   0.51 3317    0.09 0.85    0.51  A   3.4
SB  LT        0.19 0.02  85.0  30.93   40    0.28 1.00   31.21  D   0.2
SB  RT        0.53 0.02  85.0  31.18   36    9.81 0.85   34.84  D   0.4

DIR Delay LOS
EB  46.30  E
WB   0.51  A
SB  33.80  D
INTERSECTION DELAY = 24.27 INTERSECTION LOS=C

THE CYCLE LENGTH WITHIN THE BOUNDS OF  0  TO  0 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS   0.0 SECONDS

THE V/C RATIO CAN'T BE .95 FOR THE GIVEN CONDITIONS
for chosen cycle length   0.0
suggested timing phase 1 is   0.0 secs green,  -5.9 secs yellow + red cle
suggested timing phase 2 is   0.0 secs green,  -0.1 secs yellow + red cle
```

```
H PROGRAM VERSION DATE 4-29-1988
 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
M US COUPLET
WOOD/CHAPEL
:11-13-1989             time:16:27:30
 DATA SET NAMES LOADED OR SAVED
ME=26AB       GEOMETRICS=26EXST     SIGNAL=26ACUP
TED IN CBD:Y
ME & GEOMETRICS
    VOLUMES       # OF LANES     LANE WIDTH     CROSS
 LT    TH    RT    LT TH RT      LT    TH    RT     WALK
 24   503     0     0  1  0     0.0 15.0  0.0     24
  0   235   396     0  1  1     0.0 11.0 11.0     46
  0     0     0     0  0  0     0.0  0.0  0.0      0
146     0    16     1  0  1    10.0  0.0 10.0     32

FIC & ROADWAY CONDITIONS
             ADJ PARK                  PEDESTRIANS         ARR
GRADE %HV    Y/N MOVES BUSES  PHF  CROSS  BUT MIN TIME TYPE
.0%   1.0%    N     0     0  .850    10    N     18.5     3
.0%   1.0%    N     0     0  .850    10          18.5     3
.0%   0.0%          0     0  .000     0          12.0     0
.0%   0.0%    Y     3     0  .850    75    Y     12.0     3

NGS
 ASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
   t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
   *           *  *                          *  50.2   3    P
                                    *     *     16.3   3    A

=  72.5

E ADJUSTMENT WORKSHEET
 1 (MOVEMENT ADJUSTMENTS)
 LTV   THV  RTV    PHF  LTFR THFR RTFR
  24   503    0  .850    28  592    0
   0   235  396  .850     0  276  466
   0     0    0  .000     0    0    0
 146     0   16  .850   172    0   19

 2 (LANE GROUP ADJUSTMENTS)
N GROUP   FLOW N   LU    v   Plt  Prt
T-TH       620 1 1.00  620 0.05 0.00
H          276 1 1.00  276 0.00 0.00
T          466 1 1.00  466 0.00 1.00
T          172 1 1.00  172 1.00 0.00
T           19 1 1.00   19 0.00 1.00

 3 (OPPOSING VOLUME ADJUSTMENTS)
 TURN                 OPPOSING APPROACH
 OPPOSED         VOLUMES       % OPPOSING LEFT TURN    # LANES     OPPOSING
             LT    TH    RT       LT    TH    RT       LT  TH  RT    VOLUME
OUND          0   276   466      100   100     0        0   1   1     276
BOUND         0     0     0        0     0     0        0   0   0       0

ATION FLOW ADJUSTMENT WORKSHEET
N GROUP   IDEAL N  Fwid   Fhv   Fgr Fpark  Fbus Farea   Frt   Flt     s
T-TH       1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1773
H          1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 155
```

```
SUPPLEMENTAL WORKSHEET FOR LEFT-TURN ADJUSTMENT FACTOR FLT
INPUT VARIABLES
DIR  C    G  N    Va    Vm   Vlt  Plt No    Vo Plto
EB  73   50  1  620   592    28 0.05  1   276 0.00
CALCULATIONS
DIR Sop     Yo      Gu     Fs     Pl      Gq     Pt      Gf        El     Fm    Flt
EB 1800 0.154 46.110 0.702 0.046  4.053 0.954  3.778    1.602 1.000 1.000

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP     v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH      620 1773 0.35 0.69 1227 0.51
WB  TH         276 1558 0.18 0.69 1078 0.26
WB  RT         466 1269 0.37 0.69  878 0.53      *
SB  LT         172 1436 0.12 0.23  324 0.53      *
SB  RT          19 1137 0.02 0.23  256 0.07

CYCLE= 72.5  LOST= 6.0  SUM V/S CRIT= 0.49 TOTAL V/C= 0.53

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C     d1    c      d2   PF   Delay LOS Avg Q  95
EB  LT-TH    0.51 0.69  72.5   4.02 1227    0.29 1.00   4.31  A    3.8
WB  TH       0.26 0.69  72.5   3.18 1078    0.03 1.00   3.21  A    1.7
WB  RT       0.53 0.69  72.5   4.13  878    0.50 1.00   4.63  A    2.9
SB  LT       0.53 0.23  72.5  18.78  324    1.32 1.00  20.10  C    2.7
SB  RT       0.07 0.23  72.5  16.81  256    0.00 1.00  16.81  C    0.3

DIR Delay LOS
EB   4.31  A
WB   4.10  A
SB  19.78  C
INTERSECTION DELAY =  6.11 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  72.5  TO  145 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS  72.5 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  12.3 SECONDS
THE EXISTING TIMING IS OPTIMAL
```

```
8 HCM - CHAPTER 9: SIGNALIZED - OPERATIONAL ANALYSIS
 S COUP PM
NWOOD/CHAPEL
t:11-13-1989             time:16:29:48
S DATA SET NAMES LOADED OR SAVED
LME=26PB       GEOMETRICS=26EXST     SIGNAL=26PCUP
CTED IN CBD:Y
LME & GEOMETRICS
     VOLUMES      # OF LANES     LANE WIDTH     CROSS
R LT   TH   RT    LT TH RT      LT   TH    RT     WALK
  22  362    0     0  1  0     0.0 15.0  0.0     24
   0  575  346     0  1  1     0.0 11.0 11.0     46
   0    0    0     0  0  0     0.0  0.0  0.0      0
 326    0   26     1  0  1    10.0  0.0 10.0     32

A:IC & ROADWAY CONDITIONS
              ADJ PARK             PEDESTRIANS        ARR
R;RADE %HV   Y/N MOVES BUSES  PHF CROSS BUT MIN TIME TYPE
 ).0%  1.0%   N     0    0   .850   10    N    18.5     3
 ).0%  1.0%   N     0    0   .850   10         18.5     3
 ).0%  0.0%         0    0   .000    0         12.0     0
 ).0%  0.0%   Y     3    0   .850   75    Y    12.0     3

A:NGS
 :ASTBOUND   WESTBOUND   NORTHBOUND  SOUTHBOUND GREEN  Y+R PRE/ACT
 .  t  r  p  l  t  r  p  l  t  r  p  l  t  r  p
 :  *           *  *                          *  41.2   3    P
                                     *     *     25.3   3    A

C:=  72.5

LIE ADJUSTMENT WORKSHEET
RT 1 (MOVEMENT ADJUSTMENTS)
R LTV  THV  RTV   PHF  LTFR THFR RTFR
   22  362    0  .850    26  426    0
    0  575  346  .850     0  676  407
    0    0    0  .000     0    0    0
  326    0   26  .850   384    0   31

RT 2 (LANE GROUP ADJUSTMENTS)
R.N GROUP  FLOW N   LU     v  Plt  Prt
 .T-TH      452 1 1.00   452 0.06 0.00
 :H         676 1 1.00   676 0.00 0.00
 :T         407 1 1.00   407 0.00 1.00
 .T         384 1 1.00   384 1.00 0.00
 :T          31 1 1.00    31 0.00 1.00

RT 3 (OPPOSING VOLUME ADJUSTMENTS)
FT TURN               OPPOSING APPROACH
I; OPPOSED       VOLUMES        % OPPOSING LEFT TURN      # LANES       OPPOSING
              LT   TH   RT         LT   TH   RT         LT   TH  RT      VOLUME
S:BOUND        0  676  407        100  100    0         0    1   1        676
U:BOUND        0    0    0          0    0    0         0    0   0          0

I:ATION FLOW ADJUSTMENT WORKSHEET
R.N GROUP  IDEAL N  Fwid   Fhv   Fgr Fpark  Fbus Farea   Frt   Flt    s
 .T-TH     1800  1 1.100 0.995 1.000 1.000 1.000 0.900 1.000 0.892 1581
 :H        1800  1 0.967 0.995 1.000 1.000 1.000 0.900 1.000 1.000 1558
 :T        1800  1 0.967 0.995 1.000 1.000 1.000 0.900 0.814 1.000 1269
 .T        1800  1 0.933 1.000 1.000 1.000 1.000 0.900 1.000 0.950 1436
 :T        1800  1 0.933 1.000 1.000 0.885 1.000 0.900 0.850 1.000 1137
```

```
CALCULATIONS
DIR Sop    Yo     Gu     Fs     Pl     Gq     Pt     Gf         El    Fm   Flt
EB 1800 0.376 22.315 0.452 0.057 18.860 0.943 14.043     2.488 0.892 0.892

CAPACITY ANALYSIS WORKSHEET
DIR LN GROUP      v     s  v/s  g/C     c  v/c  CRITICAL
EB  LT-TH       452 1581 0.29 0.57   898 0.50
WB  TH          676 1558 0.43 0.57   885 0.76      *
WB  RT          407 1269 0.32 0.57   721 0.56
SB  LT          384 1436 0.27 0.35   502 0.76      *
SB  RT           31 1137 0.03 0.35   397 0.08

CYCLE= 72.5  LOST= 6.0  SUM V/S CRIT= 0.70 TOTAL V/C= 0.76

LEVEL OF SERVICE WORKSHEET
DIR LN GROUP  v/c  g/C    C     d1    c      d2   PF    Delay LOS Avg Q  95
EB  LT-TH    0.50 0.57  72.5   7.20  898    0.39 1.00    7.59  B    3.9
WB  TH       0.76 0.57  72.5   9.09  885    2.80 1.00   11.89  B    5.9
WB  RT       0.56 0.57  72.5   7.57  721    0.78 1.00    8.36  B    3.5
SB  LT       0.76 0.35  72.5  15.91  502    4.75 1.00   20.67  C    5.0
SB  RT       0.08 0.35  72.5  11.99  397    0.00 1.00   11.99  B    0.4

DIR Delay LOS
EB   7.59  B
WB  10.56  B
SB  20.03  C
INTERSECTION DELAY = 11.88 INTERSECTION LOS=B

THE CYCLE LENGTH WITHIN THE BOUNDS OF  72.5  TO  72.5 SECONDS
WHICH MINIMIZES CRITICAL MOVEMENT DELAY IS  72.5 SECONDS

FOR A V/C RATIO OF .95 THE CYCLE SHOULD BE  22.9 SECONDS
THE EXISTING TIMING IS OPTIMAL
```

SUPPLEMENTAL STUDY AT FENWAY STATION

Since the submittal of the Olmsted Plaza DPIR/DEIR, the major concern regarding the MBTA Fenway Park Station qualitative service analysis is the timing of the study. It is generally considered that the ridership at the station, observed in June, 1989, underestimated the average demand at the station, because the schools within the study area were in summer recess during the month of June.

In order to verify the public concern, the peak period ridership was observed again on November 29 and 30, 1989. The results were summarized and compared with the June survey results presented in the DPIR/DEIR. The comparison results are shown in Table 1.

Without considerating the effect to the bottleneck segment between Arlington and Copley stations, the volume changes between June and November are quite significant in several respects. As shown in the table, the morning peak hour demand increased 16 percent inbound and 225 percent outbound; correspondingly, the capacity increased 1 percent and 40 percent. The afternoon peak hour demand at Fenway Park Station increased 55 percent inbound and 2 percent outbound. The capacity increased 15 percent inbound and 34 percent outbound during the same period.

Based on the observation results, it is clear that the local educational and medical institutions have significant impact on the Green Line D-Branch ridership during school session. It is evidenced by the dramatic ridership increase in the AM outbound direction to Longwood Station and PM inbound direction from Longwood Station. Although the volume increase in percentage is significant, the actual load factors were 0.65 PM inbound and 0.48 AM outbound under the observed November capacity supply. Therefore, the volume increase has no significant impact to the quality of service provided by the MBTA at Fenway Park Station, but rather an indication of increased ridership on the D-Branch.

Regarding the overall Green Line system performance analyses in the DPIR/DEIR, the effect of November volume increases at Fenway Park Station is not significant. As stated in the study, the ridership volumes at the bottleneck of the system between Arlington and Copley were recorded by the Central Transportation Planning Staff in its October 1985 MBTA Green Line study. Schools were in session during the month of October. Therefore, the CTPS volumes used in the capacity analyses at the system bottleneck, Arlington Station, included the peak demand from the medical and educational institutions in the Longwood Medical Area as observed at Fenway Park Station in November.

TABLE 1

GREEN LINE FENWAY STATION RIDERSHIP SURVEY SUMMARY

	Arr. Vol.		%	Dep. Vol.		%	Capacity		%	Arr. L. F.		Dep. L. F.	
	June	Nov.	Change	June	Nov.	Change	June	Nov.	Change	June	Nov.	June	Nov.
To Boston:													
AM	1515	1760	16%	1555	1800	16%	3510	3550	1%	1.08	1.24	1.10	1.27
PM	550	850	55%	610	940	54%	3120	3590	15%	0.44	0.59	0.47	0.65
To Riverside:													
AM	300	840	180%	225	730	225%	2680	3780	40%	0.28	0.56	0.19	0.48
PM	1425	1455	2%	1380	1335	-3%	3380	4520	34%	1.05	0.80	1.03	0.74

Furthermore, it has been observed in the analysis that the peak hour capacity at the bottleneck is capable of accommodating the existing demand, although frequent headway fluctuations often caused load factor surges on some trains. The load factor surge was reflected by a very high passenger volume on a train delayed from its scheduled service time. Therefore, if the schedule fluctuation problem can be resolved, the Green Line service quality at the bottleneck stations can be improved significantly.

A special note should also be made that when CTPS Green Line counts were taken in October, 1985, the Orange Line Back Bay Station was not in operation. Back Bay area transit users were solely dependent on the Green Line. However, since the opening of Back Bay Station, a significant shift of ridership from the Green Line to the parallel Orange Line has been observed. This trend will continue to draw Copley Plaza and Prudential transit users to the Orange Line until the demand on both lines reaches an equilibrium state.

In conclusion, the November Green Line ridership volumes at Fenway Park Station reflect the average peak hour demand in the Fenway area. The October 1985 CTPS counts at Arlington Station included the average demand at Fenway Park Station. However, a percentage of the current demand at the Green Line system bottleneck, Copley Station, has been shifted to the Orange Line since Back Bay Station has been opened, which should relieve some of the high demand on the Green Line. It is also recommended that the MBTA should conduct further studies to evaluate its scheduling and dispatching system in order to raise its service quality to a better standard by minimizing headway fluctuations.

TABLE 3.11-3[1]
PASSENGER LOADING STANDARDS AND LEVELS OF SERVICE FOR URBAN RAIL TRANSIT

Peak Hour L.O.S.	Approx. Ft.^{2}/Pass.	LF[2]	Max. Vol.
A	15.4 or More	0.00 to 0.65	34
B	15.2 to 10.0	0.66 to 1.00	52
C	9.9 to 7.5	1.01 to 1.50	78
D	7.4 to 5.0	1.51 to 2.00	104
E-1	4.9 to 4.0	2.01 to 2.50	130
E-2 (Max. Scheduled Load)	3.9 to 3.3	2.51 to 3.00	156
F (Crush Load)	3.2 to 2.6	3.01 to 3.80	198

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1. Highway Capacity Manual, 1985, p. 12-9.
2. LF = Load Factor (passengers/seat).

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

SPECIFICATION

FOR

AUTOMATIC VEHICLE IDENTIFICATION SYSTEM

GREEN LINE

[illegible]

REVISION NO. 3

SPECIFICATION FOR AUTOMATIC VEHICLE IDENTIFICATION
GREEN LINE

PART 1 - GENERAL

1.01 PURPOSE

The present method of dispatching on the Green Line not allow the Dispatcher to identify vehicles by num route, or destination. Wayside information is passe along to the Dispatcher from personnel stationed at various locations on the line via two-way radio and limited by number of personnel available at any give time. An additional method of monitoring vehicle mo-ments uses headway recorders which only give an indication that a vehicle has passed a particular location. It does not give vehicle number, route, o destination.

The proposed AVI system is intended to provide the Dispatcher with enough information without wayside personnel so that monitoring of traffic density can achieved. This will allow the Dispatcher to reassi vehicle route/destination as needed.

1.02 SYSTEM DESCRIPTION

The AVI System shall provide the Dispatcher at the Command Center with the following information:

- Lead vehicle number
- Route and destination
- Location of vehicles in order of passing ke points
- Time last vehicle passed key points (timepe
- Time each vehicle passed key points (real t
- Printer giving hard copy of all above data including entire vehicle consist numbering condition of alarms.

NOTE - Key point refers to an AVI antenna location.

Dispatchers must be able to follow vehicle movement ascertain location by use of CRT screens and lighte model board.

1.04 COMMAND CENTER MODERNIZATION/AVI INTERFACE

The present Command Center, where dispatching takes place will be upgraded under a separate contract. The AVI System to be supplied under this specification shall be compatible and capable of interfacing with the Management Information Systems computer. [redacted]

Minutes of Meeting on August 10,1988
****
* CP will install new dispatch console (desk) and *
*chair equipment without extra cost to MBTA. *
****

1.05 AVI SYSTEM SELECTION

The apparent low bidder(s) of the AVI System shall be required to demonstrate the effectiveness of their system and compatibility with the Authority's System. It shall be a proven system in service successfully on a rapid transit, light rail, or similar type of system. This shall be done prior to contract bid award and may be accomplished with films, photographs, or written descriptions through a presentation.

PART 2 - PRODUCTS

2.01 AVI SYSTEM REQUIREMENTS

A. The system will be required to identify Light Rail Vehicles composed of one, two, or three car trains by passing pertinent information via modem to the Command Center. AVI wayside units are to be situated at various locations as shown on accompanying illustration No. 1.

B. The system must have the capability for automatic route selection when vehicles encounter turnouts. Wayside components must interface with existing wayside switch machine interlocking relay logic.

C. System must be capable of doing A & B in above paragraphs simultaneously.

D. The AVI Sy[illegible] shall not cause interference to o adversely a[illegible]ct any electronic system in use on the Authority. [illegible]e environment shall not affect AVI system oper[illegible]on.

E. The system m[illegible]st be capable of adding individual rou[illegible]les [illegible] trains. There route miler must b disp[illegible] and/or printed at operator's request.

F. All da[illegible]uced by the system should be in mac[illegible] reas[illegible]at for potential transfer to othe syst[illegible]real time and batch transfer mods

[illegible] data is there

APPENDIX III

HOUSING IMPACT REPORT

STOCKARD & ENGLER, INC.

Revised 11/13/89

OLMSTED PLAZA

FINAL HOUSING IMPACT REPORT

REPORT OUTLINE

This study identifies potential housing impacts and recommended mitigation measures relative to the proposed Olmsted Plaza development. Our objective is to present such information within the context of an overall Fenway/Kenmore* neighborhood housing strategy, which is divided into three parts as follows:

1. Identification of primary and secondary impacts of the Olmsted Plaza project on the Fenway/Kenmore neighborhood, utilizing the same data sources and methodological assumptions that were developed in the Draft Housing Impact Report for the Prudential Center Redevelopment and accepted by the Boston Redevelopment Authority;

2. Analysis of current housing conditions and demographic patterns in the impact area relative to the types and costs of the existing housing stock and its "affordability" for present area residents, given their household income status;

3. Recommendations for a Fenway/Kenmore Neighborhood Housing Strategy which outlines specific actions to mitigate project impacts and address local concerns for maintaining and improving the neighborhood's affordable housing stock. The use of linkage funds or other sources of subsidy are also identified for each recommended activity.

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* For purposes of this study and to facilitate data collection and evaluation, the Fenway/Kenmore District Planning boundary, as defined by the Boston Redevelopment Authority (BRA), will be used to define the Housing Impact Area.

Exhibit 1, on the following page, illustrates the Housing Impact Area.

FENWAY/KENMORE PLANNING DISTRICT

OLMSTED PLAZA Housing Impact Study

November 1989

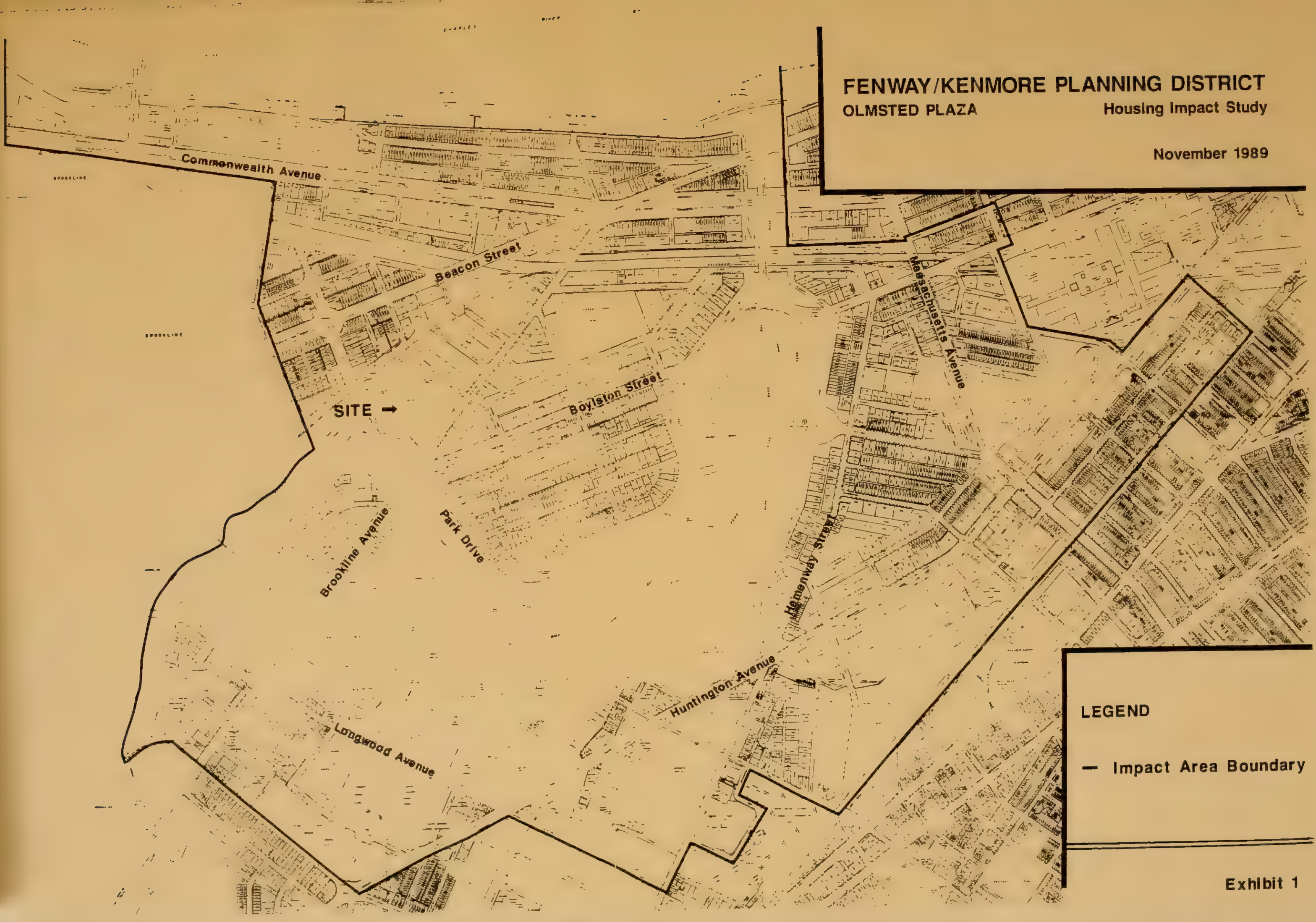

Exhibit 1

1. HOUSING IMPACT ESTIMATES

We have used the same methodology and assumptions that were developed in the Draft Housing Impact Report for the Prudential Center Redevelopment Project (which drew on research methodologies from Philip Herr and Associates, Cambridge Systematics, Abt Associates, Inc. and various BRA reports) in order to estimate the potential combined direct, indirect and induced housing demand on the Fenway/Kenmore impact area.

- DIRECT HOUSING DEMAND is generated by new employees working in the proposed project.
- INDIRECT HOUSING DEMAND results from employment outside of the Olmsted Plaza development but related to the proposed project.
- INDUCED HOUSING DEMAND includes those households moving to the impact area due to the perceived attractiveness of living near the proposed project.

The project size, as proposed at the time of this analysis, includes approximately 132,000 n.s.f. of retail-related space, 870,000 n.s.f. of office-related space, and a 300 room hotel (ALTERNATIVE A). At present, a proposed 300 room hotel is being considered for the new Brookline Avenue building.

We have also considered a course of action wherein the proposed hotel would be replaced by approximately 269,000 n.s.f. of additional office space. Our estimate of neighborhood housing impacts under this scenario is identified as ALTERNATIVE B.

In each alternative, we have used assumptions to illustrate a worse case impact. Each step of the ALTERNATIVE A impact estimate is outlined as follows. ALTERNATIVES A and B are summarized at the end of this report section.

Based on the industry norms cited in the Prudential study for the number of square feet per employee and number of employees per hotel room, the number of employees expected to work in the proposed project (ALTERNATIVE A) are as follows:

	RETAIL	OFFICE	HOTEL
Gross Rentable Area	132,000 s.f.	870,000 s.f.	300 rooms
Gross Area Per Employee	306 s.f.	213 s.f.	.9091
OLMSTED PLAZA EMPLOYEES	431	4,085	330

TOTAL PROJECTED OLMSTED PLAZA EMPLOYEES - 4,846

The Prudential study carried a "Displacement Jobs Factor" for estimating the total number of new employees working for businesses that otherwise would have located elsewhere in the City of Boston. These displacement jobs should be substracted from the estimated number of new jobs created by Olmsted Plaza. Based on the Prudential study assumptions, the "Displacement Jobs Factor" for retail and office uses are shown as follows (hotel workers were not considered in this calculation).

	RETAIL	OFFICE	HOTEL
Olmsted Plaza Employees	431	4,085	330
Displacement Jobs Factor	.40	.10	
Displacement Jobs	172	409	
NET JOBS ADDED	259	3,676	330

NET JOBS ADDED - 4,265

A final calculation, based on the Prudential Study, is made to determine the "Total Jobs Generated" by the Olmsted Plaza developme by adding estimates of indirect employment (Boston jobs), or the ne employment generated by the additional business involved in supplyi the goods and services purchased by commercial uses and employees working in the Olmsted Plaza development. In addition, such a calculation considers jobs generated by businesses locating in the immediate area due to the perceived attractiveness of the Olmsted Plaza project.

	RETAIL	OFFICE	HOTEL
Net Jobs Added	259	3,676	330
Indirect Employment Factor	.25	.33	.25
Indirect Employment	65	1,213	83
TOTAL JOBS GENERATED	324	4,889	413

TOTAL JOBS GENERATED - 5,626

A next step in our analysis considered how many of the "Total Jobs Generated" will impact the Fenway/Kenmore neighborhood. To do this, we first have to estimate the number of jobs which would likely be filled by Boston residents ("Boston Resident Jobs"). We have used information from two sources to assist in this regard;

1.) Locations of the residences of employees in the current Prudential Center, as compiled in 1987 by Cambridge Systematics

2.) Locations of the residences of employees in the Longwood Medical Area, as compiled in 1988 by MASCO (Medical Area Servic Corporation).

From the Cambridge Systematics 1987 survey, 21.3 percent of office employees resided in the City of Boston (excluding Boston Edison employees) as compared with 42.1 percent of retail employees. The MASCO study indicated that 36.7 percent of Longwood Medical Area employees were living in Boston, which we have used in estimating te number of medical-related project employees.

For purposes of this study we will assume that the percent of retail employees residing in the City of Boston is also typical of hotel employees. In addition, we have assumed that up to 62 percent of the new office space will be occupied by uses related to the Longwood Medical Area, and have divided the total office jobs generated to include medical-related office.

The following table includes our estimate of the "Number of Boston Resident Jobs", based on the assumptions made above. From this number must be subtracted the number of existing Boston residents likely to fill these jobs and who will have no impact on housing demand ("Current Resident Factor"). These existing residents are either unemployed or not in the work force or formerly Boston commuters to jobs outside the city deciding to work at Olmsted Plaza.

	RETAIL	OFFICE	MEDICAL OFFICE	HOTEL
Total Jobs Generated	324	1,858	3,031	413
Fraction Boston Residents	.421	.213	.367	.421
No. Boston Resident Jobs	136	396	1,112	174
Current Resident Factor	.403	.362	.362	.403
Current Resident Estimate	55	143	403	70
NET BOSTON RESIDENT JOBS	81	253	709	104

NET BOSTON RESIDENT JOBS - 1,147

We have used the zipcode information, from the 1987 Cambridge Systematics Survey of Prudential Center employees and the 1988 MASCO survey of Longwood Medical Area employees, for estimating potential housing impacts to the Fenway/Kenmore area. Of those surveyed by Cambridge Systematics, approximately 16 percent of retail workers and 7 percent of office employees resided in the Fenway/Kenmore district. The Longwood Medical Area survey reported nearly 14 percent of respondents living in the abutting Fenway/Kenmore neighborhood.

For purposes of this Housing Impact study we have assumed one "development related" employee per household, which is the upper limit of employee-related housing impacts, since it is difficult to estimate how many new households moving into the City might have more than one worker at Olmsted Plaza. We continued to assume that the living patterns of retail and hotel employees are similar and have applied the same "Expected Neighborhood Impact Factor" in both areas.

The following table presents our estimate of the number of employees, related to the Olmsted Plaza development (ALTERNATIVE A), we believe will move into the Fenway/Kenmore neighborhood.

	RETAIL	OFFICE	MEDICAL OFFICE	HOTEL
Net Boston Resident Jobs	81	253	709	104
Expected Neighborhood Impact Factor	.161	.071	.139	.161
FENWAY/KENMORE IMPACT	13	18	99	17

FENWAY/KENMORE HOUSING IMPACT (ALTERNATIVE A) - 147

In order to estimate the tenure choice of the 147 employees or households expected to reside in the impact area, we have allocated them as renters and owners, based in part, on the same proportions the available housing stock in the impact area -- reported by the B Research Department in 1987. Our estimate of owner-occupied units i modified by more current data on "investor-owned" condominium units, prepared by the Fenway CDC.

Owner-Occupied Units	1,495 or 11.4%
Renter-Occupied Units	11,655 or 88.6%

Thus, the net result of this analytical approach to quantifying estimated housing impacts (ALTERNATIVE A) of Olmsted Plaza on its surrounding neighborhood would indicate that the following number of households would be moving in to the Fenway/Kenmore area during the course of the development of the project -- which could take 5 years:

17	Owner Households
130	Renter Households

TOTAL HOUSEHOLDS - 147

The available housing stock for owners and renters in the Fenway/Kenmore district, according to BRA estimates quoted in the Prudential Study, is included for 1995 (the period when Olmsted Plaza will be at full occupancy) as follows:

Available to Own: 1,090
Available to Rent: 5,608 (excluding rent controlled and subsidized units)

TOTAL STOCK AVAILABLE - 6,698

Based on the number of housing units available on an annual basis, the 147 households (29 households/year) estimated to be seeking housing in the Fenway/Kenmore neighborhood, as a result of the development of Olmsted Plaza, will have a minimal overall impact on housing costs in that neighborhood, regardless of the income levels of those households.

It should be stated, however, that statistical measures, with all their built-in assumptions, should only be viewed as a guide rather than gospel. But even if the new employees related to the

Olmsted Plaza development don't mirror exactly the housing choices of employees in the Prudential complex and choose to live in the Fenway/Kenmore area at double the rate predicted (ie., twice as many households), even 294 households, or 59 households/year would still lead to an analytical conclusion that these new households would not create a "significant impact" on area rents and sales prices.

Additional housing impacts, from other possible development projects in the City of Boston (see attachment), will have a cumulative effect which may be considered more significant by Fenway/Kenmore residents.

We have estimated additional housing impacts for all such projects as follows:

	Owner Househlds	Renter Househlds
ADDITIONAL HOUSING IMPACT ESTIMATES		
FENWAY/KENMORE		
o Prudential Center Redevelopment*	14	45
o Parcel 18	5	42
o Boston University Armory & Arena		4
o Beth Israel Hospital	2	18
o Brigham & Womens Hospital	2	19
o Children's Hospital Medical Center	3	23
o Harvard Medical School	4	34
o Joslin Diabetes Clinic	1	10
o New England Deaconess	1	5
o MASCO Mixed Use Development	1	7
TOTAL ESTIMATE	33	207

* Based on Draft Project Impact Report - April, 1989.

We do not believe the purpose of this Housing Impact study is to provide mitigation measures for all other possible development projects.

Nevertheless, the issue of concern is not whether this number is "statistically significant" but the fact that additional new households will be seeking residency in an area in which the need for affordable housing is already an issue. The problems of meeting the housing needs of existing low and moderate-income households in the area will be more affected by factors related to shifts in the City's overall economy, as well as the state and/or national economy as a whole.

Our focus, therefore, for the remainder of this report will be on the larger housing dynamics in the area and what steps should be taken to preserve, as well as increase the supply of affordable housing in order to serve neighborhood needs.

HOUSING IMPACT SUMMARY
ALTERNATIVE A

	RETAIL	OFFICE	HOTEL
Gross Rentable Area	132,000 s.f.	870,000 s.f.	300 rooms
Gross Area Per Employee	306 s.f.	213 s.f.	.9091
OLMSTED PLAZA EMPLOYEES	431	4,085	330
Displacement Jobs Factor	.40	.10	
Displacement Jobs	172	409	
NET JOBS ADDED	259	3,676	330
Indirect Employment Factor	.25	.33	.25
Indirect Employment	65	1,213	83
TOTAL JOBS GENERATED	324	4,889	413

TOTAL JOBS GENERATED - 5,626

	RETAIL	OFFICE	MEDICAL OFFICE	HOTEL
Total Jobs Generated	324	1,858	3,031	413
Fraction Boston Residents	.421	.213	.367	.421
No. Boston Resident Jobs	136	396	1,112	174
Current Resident Factor	.403	.362	.362	.403
Current Resident Estimate	55	143	403	70
NET BOSTON RESIDENT JOBS	81	253	709	104
Expected Neighborhood Impact Factor	.161	.071	.139	.161
FENWAY/KENMORE IMPACT	13	18	99	17

FENWAY/KENMORE HOUSING IMPACT - 147

HOUSING IMPACT SUMMARY
ALTERNATIVE B

	RETAIL	OFFICE
Gross Rentable Area	132,000 s.f.	1,139,000 s.f.
Gross Area Per Employee	306 s.f.	213 s.f.
OLMSTED PLAZA EMPLOYEES	431	5,347
Displacement Jobs Factor	.40	.10
Displacement Jobs	172	535
NET JOBS ADDED	259	4,812
Indirect Employment Factor	.25	.33
Indirect Employment	65	1,588
TOTAL JOBS GENERATED	324	6,400

TOTAL JOBS GENERATED - 6,724

	RETAIL	OFFICE	MEDICAL OFFICE
Total Jobs Generated	324	2,432	3,968
Fraction Boston Residents	.421	.213	.367
No. Boston Resident Jobs	136	518	1,456
Current Resident Factor	.403	.362	.362
Current Resident Estimate	55	188	527
NET BOSTON RESIDENT JOBS	81	330	929
Expected Neighborhood Impact Factor	.161	.071	.139
FENWAY/KENMORE IMPACT	13	23	129

FENWAY/KENMORE HOUSING IMPACT - 165

2. CURRENT NEIGHBORHOOD HOUSING DYNAMICS

We have collected and analyzed all available data, both "hard" (quantitative) and "soft" (interviews, perceptions), on housing types and costs, as well as household income, to estimate some measure of the current affordable housing "deficit" in the impact area. We believe the following information contributes to the overall picture of the Fenway/Kenmore housing dynamics.

Housing Supply

The Fenway/Kenmore neighborhood Housing Stock includes 1,495 Owner-Occupied Units and 11,655 Renter-Occupied Units, based in part on the following BRA estimates for 1987, and more current data on "investor-owned" condominium units prepared by the Fenway Community Development Corporation. The Fenway CDC recently completed an analysis of all condominium units and have estimated that nearly 55 percent of such units in the East and West Fens are "investor-owned". We have considered this estimate to be representative for the entire Fenway/Kenmore neighborhood.

	Fenway/Kenmore Planning District
1-4 Family Structures	
Owner-Occupied	100
Private Apartment	150
Condominium	150
Subsidized Rehabilitation	700
5 + Multi-Family Structures	
Subsidized New Construction	850
Boston Housing Authority	0
Private Apartment	8,250
Condominium	2,950
TOTAL HOUSING STOCK - 1987	13,150

TOTAL PRIVATE HOUSING STOCK - 11,600
TOTAL SUBSIDIZED HOUSING STOCK - 1,550

Subsidized/Affordable Housing Stock

The Fenway/Kenmore is the only city neighborhood with no publc housing units, although approximately 11% of the rental stock was built with the financial assistance of various federal or state programs (see Neighborhood Map). As reported by the BRA, two of the existing affordable housing developments in the neighborhood are facing an expiring use deadline within the next decade.

CHURCH PARK, 221 Massachusetts Avenue - 508 units, 127 of which include a rent subsidy; expiring use 7/21/93.

BURBANK APARTMENTS, Haviland Street - 173 units, 34 of which include a rent subsidy; expiring use 10/1/97.

The Fenway CDC is currently building 107 units of affordable housing (two separate projects - SHARP and Section 202 elderly) at Peterborough and Kilmarnock Streets. Kilmarnock Street Apartments, the proposed SHARP project, includes a 75/25 unit mix consisting of 41 market rate units and 14 low-income units.

Private rental housing units can be either subject to the city's Rent Equity Board or non-controlled, with most units constructed prior to 1967 under the Rent Equity Board jurisdiction. In the Fenway/Kenmore area approximately 15 percent of the total housing units were rent controlled in 1987 (rents on these units can be raised to market level whenever a new tenant moves-in).

RENT CONTROLLED UNITS - 1987	2,000

Private Market Housing Stock

The percent of vacancy decontrolled units from 1976 to 1987 has been more than 12 percent per year in the Fenway/Kenmore neighborhood. Estimates prepared by the Boston Redevelopment Authority indicate that the number of rent controlled units will continue to decrease, so that by 1995 only 714 such units will be available in the district.

These vacancy decontrolled units comprised nearly 75 percent of the 1987 private rental housing stock (including rent controlled units).

Private Rental Stock - 1987	
Vacancy Decontrolled	6,250
Non-Controlled	150
TOTAL	6,400

In the period 1980 to 1987, the BRA estimates that 87 percent of the condominiums in the Fenway/Kenmore neighborhood were added by conversions from the rental housing stock.

Condominium Conversions	
1980-87 Annual Conversion Rate	4.59%

Information compiled as of 1987 shows that nearly one of every four housing units in the Fenway/Kenmore area was a condominium. We have assumed that over the next few years the conversion rate will reduce to 50 percent of 1980-87 rate, resulting in 1,424 additional condominium conversions by 1995.

ESTIMATED CONVERSIONS 1987-95	1,424

We have gathered additional information relative to the housing stock available to owners and renters in 1995, since the Olmsted Plaza development is scheduled to be completed and fully occupied by that date.

The following estimates of new additions to both the owner and renter stock were obtained from the BRA Research Department.

New Construction - ANNUAL	
Owner Units (condominiums)	42
Rental Units	29

New Construction - 1988 to 1995	
Owner Units (condominiums)	336
Rental Units	232
TOTAL NEW CONSTRUCTION 1988-95	568

In summary, our estimate of the 1995 Housing Stock available to those seeking housing in the neighborhood, includes 4,960 Owner Units and 7,208 Renter Units. These figures do not include subsidized rental units which we have not considered available to inmigrant employees.

1995 Housing Stock Estimate	
Owner-Occupied	100
Condominiums, including new construction	3,436
Condominium Conversions 1987-95	1,424
Private Apartments, including new construction minus conversions	7,208
TOTAL AVAILABLE HOUSING STOCK	12,168

A recent Housing Supply and Demand study conducted by Abt Associates, Inc., reported that only 0.42 percent of the City of Boston's housing units were demolished between 1980 and 1986, therefore, we have not reduced the 1995 available housing stock due to demolitions.

Housing Costs

Sales and rental information was collected from several sources, including advertisements in the Boston Globe and a recent sample telephone survey of 199 households conducted by Mt. Auburn Associates. Of those persons surveyed by Mt. Auburn Associates, 163 respondents were renters with an average monthly rent of $618, although it is important to note that 57 percent of survey respondents were living in rent controlled units, and an additional 15 percent were living in units with a State or Federal housing subsidy.

Rent levels advertised in the Boston Globe are reported as follows.

	Fenway/Kenmore Planning District	Boston City-Wide
1987 Median Rents		
Studios		\$ 450 to \$ 549
1 Bedrooms		\$ 600 to \$ 699
2 Bedrooms		\$ 750 to \$ 849
3 Bedrooms		\$ 950 to \$1,099

	Fenway/Kenmore Planning District	Boston City-Wide
Typical October 89 Rents		
Studios	\$ 550 to \$ 630	
1 Bedrooms	\$ 700 to \$ 850	
2 Bedrooms	\$ 925 to \$1,150	
3 Bedrooms	\$1,200 to \$1,450	

A limited number of condominium units were listed for sale in the Boston Globe. We have assumed that an average sales price for such a unit is \$110,000, or \$905 per month (10% downpayment, 10.5% fixed for 30 years). Total housing costs would increase to more than \$1,075, including real estate taxes and condo fees.

Demographics

Since 1950, the Fenway/Kenmore neighborhood has continued to lose population, especially children, middle-aged adults, and the elderly. The area has the highest proportion of young adults of any other city neighborhood, primarily due to the proximity of Boston University, Northeastern University, and other colleges.

	Fenway/Kenmore Planning District	Boston City-Wide
Age Composition of Household Population 1985		
0-14 years	11%	17%
15-24 years	43%	23%
25-34 years	30%	22%
35-54 years	10%	20%
55+ years	7%	18%
MEDIAN AGE	24.7 years	28.8 years

More recently, the minority population in Fenway/Kenmore continues to grow, with approximately 48% of the household population reported to be non-white in 1985.

Racial/Ethnic Composition of Household Population - 1985	
White	52%
Black	15%
Hispanic	8%
Asian	25%
Other	0%

The median household income in the Fenway/Kenmore neighborhood was substantially below the city-wide median in both 1979 and 1984, which is shown on the following table.

	Fenway/Kenmore Planning District	Boston City-Wide
Median Household Income		
1979	$ 8,362	$12,530
1984	$16,300	$19,250

If we assume a 4 percent increase in household income per year since 1984, the 1989 median household income for Fenway/Kenmore would be $19,831.

The following table presents our generalized estimates relating income and housing cost, under the assumption that a household should spend no more than 30% of total income for housing.

Estimated 1989 Median Household Income	Affordable Rent	Affordable Condo Sales Price
$19,831	$ 496	$54,198
	Median Market Rent	Median Condo Sales Price
	$950 (1-2 BRs)	$110,000
"Affordability Gap" for Median Household Income	1.8	2.03

Without benefit of updated survey information on household income and housing costs, we are unable to provide a better estimate of the current housing "affordability gap". We have determined that the estimated 1989 median household income must nearly double in order to afford the median rent or condo sales price.

3. RECOMMENDED NEIGHBORHOOD HOUSING STRATEGY

Our recommended Neighborhood Housing Strategy for the Fenway/Kenmore area focuses on the following overall goals:

1. to mitigate the impacts of new households projected to seek housing in the area as a result of the development of Olmsted Plaza so that the current unmet demand for affordable housing is not exaccerbated;

2. to preserve and promote affordable housing development opportunities on the limited number of vacant parcels within the impact area;

3. to enhance and protect affordable housing development or conversion opportunities in designated areas, eg., along Boylston Street and Brookline Avenue, through land use and zoning tools which should limit new or expanded commercial uses unless they are part of a mixed-use redevelopment plan;

4. to increase affordable homeownership opportunities in an area where only about one-fourth of the residents are owners;

5. to strengthen the "fabric" of the neighborhood by supporting neighborhood-based organizations wherever feasible for the development and delivery of affordable housing units and related employment opportunities in order to build upon local economic multipliers, as well as neighborhood involvement in the ownership of real estate.

Based on these goals, we have developed recommendations which reflect our understanding of local needs and problems, as perceived by those familiar with the neighborhood and supported by available data.

The following specific activities support one or more of the goals outlined above.

1. Boston University Properties:

Boston University and City officials have entered into an agreement to dispose of 19 buildings (see Neighborhood Map) currently owned by the University, in accord with a mutually agreed upon plan. A total of 225 housing units are contained in such buildings.

1 (a). Phase One:
The City is currently drafting a Request For Proposals to solicit developers interested in a first package of seven (7) University properties, including 75 units, in the Audubon Circle area. The RFP is reported to request that the

buildings be converted for use as Single Room Occupancy (SRO) housing units, with 26 units (35%) being designated for low income tenancy and 49 (65%) as market rate units.

Olmsted Plaza Associates is willing to work with a non-profit developer in formulating a proposal to develop these properties in the Audubon Circle area. Specifically, the developer's contribution will include assisting the non-profit in organizing a development team, establishing budget estimates and revenue projections, obtaining public approvals and permits, developing schematic plans and construction documents, and securing the necessary financial commitments.

Olmsted Plaza Associates will provide $20,000 toward this effort in order to respond to the City's RFP. Once the developer is selected, other sources of front-end financial support such as CEDAC and LISC could fund the necessary front-end costs in completing the planning/pre-construction phase of the work.

We cannot accurately assess the level of public subsidy needed to create the SRO units being called for in the RFP without having the knowledge of the acquisition cost for these 7 buildings, or the requirements contained in the RFP as related to projected rent levels for the SRO units, or by carrying out a detailed project pro forma (which is not within the scope of this study). However, we assume that a cost write-down will be necessary, along with other sources of city and state financial assistance (HIF, R-DAL, MHFA, etc.) to produce a 75% - 25% mixed income project. This write-down should be taken from the developer's linkage contribution by using the "Housing Creation Option" for this high priority neighborhood housing project.

1 (b). Phase Two:

The second phase of this property disposition package includes 6 buildings totaling 68 units; the BRA's current plan for reuse of these properties is as a limited equity cooperative. The income mix under discussion is 25% low income, 25% moderate income and 50% market income. Again, without knowing the negotiated selling price for these units, it is difficult to estimate the size of the "gap" required to produce the income mix desired. Because this income mix is more weighted toward affordable units, and assuming that the purchase price to Boston University has not been heavily discounted, we would anticipate that a substantial subsidy will be required from Olmsted Plaza's linkage contribution. Again, we recommend that "Housing Creation Option" be utilized in order to produce economic feasibility for this development.

2. Peterborough Street Parcel:

One of three satellite surface parking lots, located off Peterborough Street at Jersey Street, is being offered by Sears Roebuck as part of the sales package to the developer of Olmsted Plaza (see Neighborhood Map). The Peterborough site includes nearly one (1) acre and is currently used for parking by employees of the Longwood Medical Area.

Olmsted Plaza Associates will provide up to $10,000 for preliminary design and engineering studies for the development of approximately 125 units of mixed income housing on the Peterborough parcel with the intention of making this site available at no cost for affordable housing.

We recommend that this site be developed as a limited equity cooperative (as is proposed for Phase Two of the Boston University properties) which provides an ownership model for a neighborhood with limited ownership opportunities, as outlined in our general goals for the area. As stated in #1 above, we have not been charged with developing project pro formas for specific development opportunities, so that the projected costs of a 125 unit development on this site can only be roughly estimated based on comparables in the area.

For example, the Kilmarnock Street SHARP development carried acquisition costs of only $5000/unit and was approved by MHFA with 25% of the units as low income. The developers stated that in order to achieve an income mix of 40%-40%-30% between low, moderate and market incomes, they would need to provide an annual subsidy of about $75,000/yr (presumably on some type of declining basis over time).

We recommend that this limited equity cooperative seek to achieve a similar mix between low, moderate and market incomes. Using the Kilmarnock model of approximately $3,000/yr per additional low/moderate income unit, the additional 56 units on the Peterborough Street site would cost about $170,000 initially and might average about $150,000/yr over 10 years. Therefore, we propose that a $1.5M fund from the linkage contribution be established to finance this annual subsidy. We assume that other sources of public financial assistance such as HIF and MHFA will be necessary to create this affordable housing model. These linkage funds can be made available annually to supplement the project's cash flow over time or up-front, if the developer is discounting the stream of linkage payments into a present value payment.

The land value contributed by the developer for this project, we believe, should be counted as part of Olmsted Plaza's linkage contribution; this value should be determined as the maximum value which can be supported by a limited equity cooperative project with the income mix as proposed.

In order to further assist low/moderate income households in covering their equity requirements to participate in this cooperative, financial assistance averaging approximately $5,000 per household most likely will be necessary. For the projected 88 households, this would total $440,000. Olmsted Plaza Associates will fund a portion of these costs; in order to raise funds for this purpose, the Peterborough Street parcel will be leased to a parking lot operator for a period of two years. The net income generated by such a lease is estimated to be $180,000 for the two-year period.

Olmsted Plaza Associates proposes that such a financial assistance program be operated by a charitable organization composed of representatives of various housing advocacy groups in the Fenway/Kenmore area, as well as City agencies and local non-profit organizations. Olmsted Plaza Associates will reimburse the charitable organization up to $15,000 per year for performing outreach and administrative services in this regard. The additional funds to assist with household equity requirements required should be secured from the State's Housing Innovation Fund (HIF) which allows for such share loans in its program regulations.

3. Boylston Street/Brookline Avenue Corridor:

The potential acquisition and/or reuse of underutilized parcels or parcels which are vulnerable to shifts in the real estate market within the Boylston Street and Brookline Avenue corridor remains an important element in an overall neighborhood strategy for increasing the supply of affordable housing. Such future development opportunities should be supported by planning and zoning tools available to the City (such as overlay districts) in order to protect potential housing sites from being developed strictly for commercial uses. Mixed use plans, including first floor retail space and housing above should be given priority in the City's permitting and approval process.

The re-use of the Van Ness Street parcel, which is also included in the Sears sales package, should be carefully considered for potential residential purposes before being allowed to be developed non-residentially. However, it is not obvious to us without a more detailed review that this is an appropriate housing site.

4. Corporate Equity-Sharing for Affordable Housing:

The need for a stable and increased supply of affordable housing in the Fenway/Kenmore district cannot be met solely by the infusion of public sector dollars from either city, state or federal government sources. The private sector must be viewed as a legitimate source for new funding opportunities, particularly if the principle of self-interest can be demonstrated.

We recommend that a corporate equity sharing plan be established to increase the amount of affordable housing available in the impact area. Corporate equity sharing uses real estate as an employee benefit, first by assisting employees to own dwellings which otherwise would be beyond their financial capacity to do so, and second, by transfering part of the corporate share of the equity to the employee on an annual basis as part of an employee compensation package. Taking appropriate advantage of insurance and tax benefits will enable the corporation to realize a positive return on investment - without relying on the typical model of property appreciation for the gain.

For example, an employee earning between $25,000 - 30,000 at Olmsted Plaza might be able to afford approximately 50% of the costs associated with owning a unit in the Fenway/Kenmore area which averages about $110,000 in today's market. The employer can finance the other 50% and all closing costs through a combination of cash equity and borrowings based on commercial credit lines (perhaps MIFA could establish a tax-exempt bond program to assist this piece of the transaction). Employer and employee split the cost of a life insurance policy to assist the employee's survivors in case of death to buy out the corporation's remaining equity interest. If the employee remains for a designated length of time and performs up to expectations, the employer gradually gives away a portion of its equity until the employee completely owns the property. This program is a nonqualified benefit so the employer can offer it to as many or few employees as it wishes.

We believe that this type of program will be well received by CEO's and CFO's once it is understood by them. The advantages go beyond simply attracting workers to the company; in addition, the program can reduce employee turnover and increase employee productivity, both of which have cost consequences for the company. This program enables companies to acquire a capital asset which provides an acceptable return on investment rather than having to provide an annual subsidy, bonus or wage increase to the employee to cover high housing costs which drain the company's working capital.

In addition to economic development benefits, there are benefits to be realized from such a program relative to mitigating the housing impacts on the surrounding neighborhood created by the influx of new households seeking to rent or buy in the area. If employers create an equity sharing program for those employees choosing to live in the Fenway/Kenmore area (or any larger impact area as subsequently defined when the details of the program get established), then those employee-households will not be competing for the limited supply of affordable housing already insufficient to meet existing demand in the neighborhood. If the program were to be structured so that units to be purchased must be sold at 10% below appraised market value, or at a market value established prior to the start of such a program, then housing prices would not be driven up by the influx of households with this combined purchasing power seeking to buy units as they turn over on the open market.

Housing units selected under this program can be scattered through the area or can be constructed to meet the predetermined needs of employers. In our view, there is little reason to use this program with the limited new residential construction opportunities which exist in the impact area (those opportunities are addressed elsewhere in this report). However, there is no reason why a "block" of residences cannot be made available for such an employee benefit program, either as condominiums or as limited equity cooperatives.

The resale provisions within the program to be structured between the employer and employee reward long term employment, but such a program does not need to allow the housing unit under resale to float at the market rate. It is in the best interests of the employer to fill a unit with a new employee and to keep the costs as low as possible. However, should the company not need to fill that particular unit with a new employee or should the company go out of business or leave the area, the unit does not need to be resold at market value in order for them to realize a reasonable return on equity. Thus, there can be mechanisms incorporated into the program to maintain this housing as affordable for at least 20 years, if not longer, and such mechanisms should be emphasized by the developers in selling it to prospective corporate tenants.

We recommend that such a program become an major component of an affordable housing strategy for the impact area because it infuses needed private sector dollars into the housing equation and it deals directly with new employees moving into the area as a result of taking employment in Olmsted Plaza. Olmsted Plaza Accociates should be responsible for developing the necessary corporate awareness as part of its marketing efforts, and subsequently it should be responsible for assisting new corporations to structure specific programs which suit their needs. Finally, it should help put together the range of services required to implement the program. Part of those services, namely those involved in finding the appropriate housing, and structuring the deal for such units should be coordinated with housing providers in the impact area so that the use of such services can build upon neighborhood economic development objectives.

5. Future Affordable Housing Alternatives:

The two buildings with expiring use deadlines mentioned above should be evaluated for purchase as limited equity cooperatives or alternatively, as mixed income rental or sales housing. Because the City of Boston has passed legislation which deals with expiring use projects by having them covered under rent control if their mortgage is prepaid, the "residual value" of these properties is already diminished below their open market value.

The limited partners who own the properties will have exhausted the tax losses which were the basis for their investment and will be facing tax gains, meaning they will have an additional tax burden from these properties which will not be providing them income to cover such tax payments. Consequently, they should be ready, willing and able to accept a sale which carries with it a price tag which very well could be supported by an affordable housing proposal.

SUMMARY

The City of Boston's linkage policy requires developers of large commercial projects either to build affordable housing by choosing the Housing Creation Option, or to contribute money to the Neighborhood Housing Trust for such purposes. The amount of the housing linkage obligation is calculated at $5 for every square foot over 100,000 square feet.

A development program of 1.557 million gross square feet, as proposed for Olmsted Plaza, will generate a housing linkage obligation of $7.285 million.

Linkage Obligation	
o Main Building (minus 100,000 s.f.)	$4,605,000
o Park Drive Building	$1,135,000
o Brookline Avenue Building	$1,545,000
TOTAL	$7,285,000

Although the city's linkage program is designed to invest in affordable housing opportunities in the city's neighborhoods; to date, no linkage projects are underway in the Fenway/Kenmore area.

Thus, we have recommended that three critically important projects receive highest priority for linkage funds. In addition, the value of the Peterborough Street parcel should be counted toward this linkage obligation - which should be based on the limited equity cooperative model outlined above. These three projects will require a substantial percentage of Olmsted Plaza's linkage contribution (depending on how much linkage money from the Prudential Center redevelopment also can be applied to the Boston University properties).

We do not recommend that 100% of the linkage money be allocated to the impact area as it establishes a poor precedent for subsequent city housing policy deliberations and ignores pressing affordable housing needs from other neighborhoods within the city. Therefore, we recommend that some small percentage of the linkage funds be given to the City's Neighborhood Housing Trust to allocate according to their own priorities when evaluating the other projects requesting such funds.

In addition, we have recommended that a substantial influx of private sector corporate dollars be included in the overall strategy of addressing affordable housing needs in the Fenway/Kenmore area. In sum, we believe that this Neighborhood Housing Strategy, taken as a whole, moves beyond the issue of mitigating Olmsted Plaza's housing impacts by recognizing that this development offers unique opportunities to combat the ongoing problem of providing housing which is within the financial reach of neighborhood residents.

Finally, we recommend that the fifth goal outlined in our neighborhood housing strategy be weighed heavily in implementing any of the recommended activities in this report. Building and maintaining neighborhood confidence is the foundation of neighborhood health and vitality; such confidence is in large measure based on the reality as well as the perception of neighborhood residents that they have some measure of control over their lives and what goes on in their neighborhood. To the degree that the City is responsive to those issues and to the degree that development and other activities which are carried out in the neighborhood are administered by neighborhood-based organizations, this goal of confidence-building will be advanced.

Therefore, we recommend that the "Housing Creation Option" allowed under the City's linkage policy be chosen for the use of linkage funds in both the Peterborough Street site and the first two phases of the disposition of the Boston University properties, precisely so that neighborhood involvement in the development process can be strengthened. Other housing-related activities should be considered in a similar vein as long as there is legitimate community support and representation in the neighborhood-based organizations vying to undertake the work.

OTHER DEVELOPMENTS PLANNED OR APPROVED WITHIN THE STUDY AREA

Map No.	Development Name	Proposed Land Use(s)	Expected Completion Year
1	Prudential Center Redevelopments	1,000,000 SF Office 270,000 SF Retail 300 Housing Units	1994
2	Parcel 18	771,700 SF Office 51,180 SF Retail 150 Residential Units 90,600 SF Cultural Center	1993
3	Boston University Armory and Arena	1200-Bed Student Housing 24 Faculty/Staff Housing Units 43,000 SF Retail 627 Parking Spaces	1991
4	Beth Israel Hospital - Emmanuel Science Building Research West	84,000 SF Research 16,000 SF Inpatient 8,000 SF Outpatient Medical Office	1994
5	Brigham and Womens Hospital	115,000 SF Research	1994
6	Children's Hospital Medical Center	142,000 SF Research	1994
7	Harvard Medical School	209,000 SF East Quad Research Facility 150 Parking Spaces Garage	1994
8	Joslin Diabetes Clinic	60,000 SF Research	1994
9	Massachusetts College of Pharmacy and Allied Health Sciences	65,000 SF Dormitory (308 Beds) 60,000 SF of Classroom	1994
10	New England Deaconess	30,000 SF Outpatient Medical Office	1994
11	MASCO Mixed Use Development	25,000 SF Research 25,000 SF Office 20,000 SF Retail 7,000 SF Child Care 525 Parking Spaces	1994
12	Beth Israel Hospital Children's Hospital	200 Parking Spaces	1994
13	Massachusetts College of Art	99,000 SF Existing Parcel (Future land use is uncertain at this time. No ENF/PNF filed as of 8-15-89.)	Post-1996

APPENDIX IV

EMPLOYMENT IMPACT ANALYSIS

APPENDIX IV

EMPLOYMENT IMPACT ANALYSIS AND DEVELOPMENT OF A JOBS LINKAGE PLAN

Mt. Auburn Associates

November 14, 1989

OLMSTED PLAZA:

EMPLOYMENT IMPACT ANALYSIS AND DEVELOPMENT OF A JOBS LINKAGE PLAN

Chapter 1

INTRODUCTION

The redevelopment of the Sears building in the Fenway provides a unique opportunity to link job creation with the employment needs of local residents. Through the development of creative training programs, the Olmsted Plaza Development will open up new economic opportunities to unemployed and underemployed residents of the Fenway/Kenmore and Mission Hill neighborhoods.

The development of an effective strategy to link community residents with the jobs created through the Olmsted Plaza Development and other employment opportunities in the community required an in-depth analysis of work force trends in the community and of the characteristics of jobs in local businesses and institutions. Employment trends and occupational characteristics of the health care/biomedical industry are particularly important because the development is adjacent to one of New England's largest concentrations of medical research and services and because of the developer's interest in marketing office space to biomedical firms.

In order to ensure that the proposed development meets the economic needs of area residents, Mt. Auburn Associates carried out a study with the following components:

- *Identify general employment needs of residents and the labor force characteristics of the neighborhoods adjacent to the development.*

- *Identify occupational characteristics and training needs of the local businesses and institutions in the Fenway area.*

- *Identify labor force characteristics and potential training needs of the biomedical industry.*

- *Analyze existing education and training programs available for residents of adjacent neighborhoods.*

Based on this analysis and discussions with public officials and neighborhood representatives, Mt. Auburn Associates formulated models and options for using the jobs linkage funds generated by the development. The options focus on mechanisms to increase employment opportunities for unemployed and underemployed neighborhood residents as well as opportunities for a broader segment of the city's work force, particularly in biomedical fields. Training programs to provide entry level and more skilled positions in businesses located in the Olmsted Plaza development was particularly emphasized.

CHAPTER 2

EMPLOYMENT NEEDS OF LOCAL RESIDENTS

Targeting job opportunities to neighborhood residents requires an in-depth understanding of the employment needs of neighborhood residents and the characteristics of the neighborhood's labor force. Limited data exist to provide a picture of the current residents of the city of Boston and the situation is worse for individual neighborhoods. The most reliable data, the U.S. Census, is currently 10 years old. The mid-decade census, completed for the Boston Redevelopment Authority, provides relatively good data at the neighborhood level. However, the past five years have been a period of rapid change in the economy and housing market. Therefore, even five-year old data does not provide the information necessary to develop a well-targeted job training program.

To get a more complete picture of community labor force characteristics -- number, income and skill levels of unemployed and underemployed, Mt. Auburn conducted a telephone survey of 200 households in the Fenway/Audubon Circle (hereafter referred to as Fenway) and Mission Hill Neighborhoods. This survey provided a *statistically-valid* overview of the economic status and needs in the local community.

The survey provides a general picture of conditions in the neighborhoods, but does not give a deep understanding of the problems of the most needy in the community -- the unemployed, underemployed, and those not participating in the formal economy. Mt. Auburn Associates supplemented the survey of residents with interviews of human services providers in the Fenway and Mission Hill neighborhoods to craft a comprehensive understanding of economic needs in the community.

2.1 Resident Survey Results

Methodology

To provide current information on the economic needs of area residents, Mt. Auburn Associates designed a survey of households in the Fenway and Mission Hill neighborhoods. The sample was randomly chosen from the Election Commission list of residents -- this list includes both registered and non-registered voters. All residents listed as full-time students were eliminated from the list. To obtain the highest possible response rate, the survey was undertaken after Labor Day and calls were made between the hours of 6:00 and 9:00 in the evening.

About 23,390 residents are listed by the Election Commission in the targeted neighborhoods. Because current telephone numbers for many of the listed residents were difficult to locate, over 2,000 names were selected to yield about 460 usable telephone listings. Of the 450 called, about 260 did not respond to the survey. Of the nonrespondents, 118 refused to answer, 42 could not be contacted, there was a language or hearing barrier for 11, 17 had moved outside of the neighborhood, 54 numbers were changed or disconnected and 18 others were not relevant to the sample. The exact response rate from available telephone numbers was 43%, somewhat lower than the anticipated 50% response rate.

The methodology has certain biases. Long-term residents and larger families were over-counted because these categories were more likely to be found in larger numbers in the data base. While this did bias the results, these two categories represent precisely the groups of most interest for the purpose of the survey. Non-English speaking residents, and individuals who had moved to the area recently were under-counted. Interviews with community organizations who work with the neighborhoods' non-English speaking population provided additional information on this groups economic conditions.

Analysis of Survey

The survey of residents of the Mission Hill and Fenway neighborhoods of Boston offers a picture of current demographic and economic conditions. Together, the two neighborhoods have a resident base which is very diverse by race, income levels and occupation. Each neighborhood is, however, very distinct and there are clear differences in the economic needs of their residents. The survey revealed economic conditions in the two neighborhoods:

- Even after full-time students were eliminated from the sample, the neighborhoods are predominantly made up of one and two person households, with only about 13% of the households having children under the age of 18.
- Due to the sampling process, longer term residents were weighted heavily. Yet, given perceptions of change in those communities, it is significant that 36% of those interviewed had lived in the neighborhood for over 10 years.
- The neighborhood is racially mixed, with about 21% of the residents Black, 4% Asian, and over 15% Spanish-speaking. It should be noted that the 1985 BRA survey of Boston residents found 26% of the residents of Fenway/Kenmore to be Asian. Our survey did not result in similar findings, and our knowledge of the community leads us to conclude that 4% is probably a more accurate number.
- The neighborhoods have a relatively large number of retired and elderly residents.
- The community is highly educated. Close to 60% of the residents in surveyed households have a college degree, compared to about 28% of residents of the city of Boston in 1985.
- While the community has a relatively large proportion of higher-income residents (over $50,000 in household income), about one-third of the households had incomes of under $20,000 and could be classified as poor or working poor. Fifty-four percent of households making under

$10,000 were paying over one-third of their income on housing and about 34% of those making between $10,000 and $20,000 were paying over one-third of their income on housing.

Analysis of labor market conditions and work patterns among residents provided the following information:

- As a whole, unemployment in the community remains relatively low, at under 4%.

- While unemployment is low there is some perceived instability in the employment picture. Close to 15% of households reported that it is somewhat or very likely that someone in their household would be laid off from their job in the next year. Moreover, another 12.5% of those interviewed reported that they were actively seeking another job.

- Underemployment was also seen as a problem by some residents. About 5% of the residents of the households surveyed were working part-time and about 15% reported that they had a skill that they were unable to use. Many of those reporting underutilized skills were in the commercial arts. Some individuals with technical skills were unable to use them in the job market.

- Barriers to employment included lack of transportation, lack of day care, and inadequate English-speaking skills. However, a very small proportion of the households were seriously affected by these barriers.

- A large number of residents of Mission Hill and the Fenway work in the city of Boston -- about 74%. Moreover, close to 10% of the residents work in the Longwood Medical Area and almost 20% work in the immediate vicinity -- the Fenway, Mission Hill, or Kenmore Square.

- The work force of the community is highly professional and technical. About 60% of the residents had professional, managerial, or technical occupations. In contrast, the BRA resident survey found in 1985 that in the city as a whole only about 36% of the residents could be classified in these more highly skilled areas.

These findings of the community mask some significant differences between the Mission Hill neighborhood and the Fenway neighborhood. These differences include:

- The Fenway is more dominated by single-person households and two-person households. Mission Hill has a larger percentage of families.

- Mission Hill is much more racially diverse with a quarter of the residents Spanish-speaking and about one-third black.

- The residents of Mission Hill are not as highly educated. However, even in Mission Hill the level of education appears to be higher than city-wide averages.

- Mission Hill has a much higher percentage of households living below the poverty level and a higher proportion of unemployed.

- Day care was perceived as a critical barrier to about 9% of the Mission Hill households as compared to only 1% of the Fenway households.

- There is more economic instability in Mission Hill, where close to 11% of the households reported it was very likely that an employed member would lose his or her job in the next year.

2.2 Results of Interviews with Human Service Providers

While a survey of residents provides an overall picture of economic conditions, it provides little detailed information about those residents most in need. Given the concern to target job opportunities to these most-needy residents, it was critical to collect more anecdotal information on the barriers which prevent many residents from fully participating in the Boston economy. To provide this information, Mt. Auburn conducted interviews with several human services providers, including public housing tenant task forces, day care providers, and social services agencies. These interviews revealed the following information relating to the employment and training needs of the Fenway/Mission Hill neighborhood of Boston.

Unemployment and Underemployment

Overwhelmingly, respondents reported that unemployment is a significant problem in this community. There are several public housing developments in the Fenway/Mission Hill area, and these housing projects are particularly affected by high unemployment. The social service providers responded that unemployment was severest among young blacks and other minority men and single mothers.

Underemployment was also a significant issue for low-income residents. Due to language and literacy problems and lack of education and skills, many residents work in jobs which provide lower wages than a standard public welfare budget. These low-paying jobs are the only option for low-income people who would lose Medicaid entitlement if their income exceeded eligibility guidelines. Respondents felt that until low-cost health insurance was available, underemployment would remain an issue. The lack of affordable day care was also cited as causing underemployment, particularly for single mothers. Because they have difficulty obtaining affordable day care, many single parents can only work during school hours. According to the respondents, these are typically jobs with low hourly pay and no benefits.

Child Care

The lack of affordable day care was cited as one the most significant barriers to employment facing low- and moderate-income residents of the Fenway/Mission Hill area. Due to the Massachusetts state budget crisis, it is expected that the issue will become even more critical. Currently in the Mission Hill/Fenway area there is a one year waiting list for all subsidized day care slots available to the working poor -- two-child households with family incomes under $19,500 per year -- and participants in the state Employment and Training (ET) program who have been working for more than one year but are still low-income. Statewide, as many as 2,000 subsidized day care slots have recently been lost due to budget restrictions.

One day care provider noted that it is becoming increasingly common for working parents to go back on welfare and enroll in the ET program, so as to be eligible for day care vouchers; however, vouchers for ET participants extend for only one year, after which participants go on the waiting lists for the subsidized slots no longer available. She noted that for many poor people struggling to get off welfare, the new budget cuts will have a fatal impact on their efforts to stay in full-time employment.

An additional barrier to employment is the lack of bilingual day care services, either in this community or anywhere else in the city. The Mission Hill neighborhood has a large Hispanic community. Many of the parents cannot speak English and are reluctant to place their children in day care where there are no bilingual staff. This reluctance is due to both a desire to retain cultural identity and the fear of not being able to communicate with the providers, to express their concerns for their children, or to read notices that the provider may send. Thus, for the non-English speaking community the lack of affordable day care is severely compounded by the lack of bilingual care in the area.

The respondents noted that while all types of day care is needed, day care for school age (ages 5 - 12) children is particularly needed, both before and after school. While there was a shortage in infant and toddler day care, some respondents noted that these children were more easily cared for by other family members. However, all respondents agreed that the lack of available and affordable day care of all types was one of the most significant barriers to full-time employment facing low- and moderate-income people.

Language and Literacy

Among the poorer residents of the Fenway/Mission Hill area, both the number of non-English speaking and/or illiterate people is high, according to respondents. The two major groups of non-English speaking residents are Hispanics and Asians (including Chinese, Vietnamese, and Cambodian). Many residents lack basic reading and writing skills or the ability to communicate in English. Language and literacy barriers were reported as a critical factor contributing to both unemployment and underemployment. All respondents noted the need for a significant increase in English-as-a-Second-Language (ESL) and remedial reading and math programs. While there are several ESL, GED, and remedial programs currently offered in the area, respondents felt that these needed to be increased and offered during both days and evenings. Budget cuts have reduced these programs' capacities and it is expected that more cuts are imminent. The reduction of ESL and GED programs is compounded by increasing drop-out rates for the area's high school students.

Transportation to evening classes is a factor inhibiting participation in programs. The Community Schools program formerly provided transportation to their evening ESL, GED and remedial education programs, but this service is no longer available. Respondents noted that for residents living in some parts of Mission Hill, transportation is critical to participation in these programs, as residents are reluctant to travel alone at night.

Asian immigrants in the Fenway have access to specialized human services and employment and training programs located in Chinatown. These organization offer ESL classes and job training. People with good English skills can attend the six-month business skills program which covers typing, word processing, and office skills. Asians who lack sound English skills often attend the 14-week training programs for electronics. It used to be very easy to get a job after attending the electronics class, but it is getting more difficult as some of the companies who used to hire these graduates have closed.

Within the Asian immigrant community, there is a large variation in education and skills. Immigrants from Hong Kong tend to have higher levels of education and more knowledge of English. Refugees from Vietnam and Cambodia are less educated and have additional problems caused by events in their home countries. Special programs, such as the Refugee Program sponsored by Action for Boston Community Development (ABCD), exist to help these people adjust to life in Boston.

Adequacy of Existing Programs

There are several job training and employment placement programs available to residents in the area through such agencies as The Community Schools, Training, Inc., the ET program, Sociad Latino, and the Parker Hill/Fenway Neighborhood Service Center. However, the respondents felt that these programs were not adequate to meet the needs of the unemployed in the community. Several factors were noted as significant:

- There simply are not enough programs to accommodate the number of people needing training.
- Job training programs are not current with job opportunities. Several respondents noted that training should be targeted to the medical technology area and to the job market utilizing basic computer skills. While basic office skill training is offered, these programs need to be consistent with current office need, like word processing. Training programs are not available for higher-paying professional or technical positions.
- More ESL and GED programs are needed to prepare people for job training programs. With a large non-English speaking population both ESL and bilingual training programs are needed in this community.
- Programs and services in the area are not coordinated and, due to often unstable funding, change frequently. Social service providers don't have a comprehensive understanding of all the programs and services available. Budget cuts have added more confusion.

Additional Barriers to Employment

Several other issues were noted as contributing to unemployment in the Fenway/Mission Hill area. Drug abuse and drug dealing were reported to be dangerously prevalent in the community and are seen to greatly affect employment. More prevention and intervention services are needed and should be included in employment and training strategies, according to the respondents.

The respondents noted that for many of the low-income people in the area, particularly in public housing projects, unemployment was often only one problem of many and is often compounded by drug and alcohol problems, family crisis, housing problems, and health issues. Employment and training programs need to be better coordinated with other social services in order to be effective. Comprehensive case management is necessary for people who face more than one barrier to employment to ensure training and employment can be maintained.

While respondents feel training and placement services are critical, they think follow-up and extended support services are also needed. For poor people with little or no previous work experience, extended support is seen as essential to maintaining long-term employment. New workers may need assistance coordinating day care arrangements to ease the transition from welfare to a work environment; encountering an unfamiliar culture, particularly for recent immigrants; and adjusting to a steady work schedule. Respondents noted that without extended support services, many new workers have been unable to maintain long-term employment.

2.3 Conclusions

The results of the resident survey and interviews with human services providers show a sometimes contradictory view of needs in the Fenway/Mission Hill communities. The differences reflect the diversity in the communities. Both neighborhoods, but the Fenway in particular, have highly-skilled, professional, middle- and upper-income residents as well as residents living in poverty who have not participated in the general prosperity that the city has witnessed over the past decade. When viewed as a whole, there are no enormous economic problems. Yet, poverty, unemployment, and underemployment remain grim realities in the Mission Hill neighborhood. And, even in the Fenway with its highly educated and relatively prosperous resident base, there are many individuals with real economic problems.

Interviews with community organizations reveal that education and training programs are unlikely to address many of the more serious problems in those communities. Increasingly, poor residents lack access to a wide range of support services and do not have the basic skills needed to effectively utilize the job training system.

Because of neighborhood diversity, a Job Linkage strategy able to meet local needs should have three components:

- Provide more technical and professional training opportunities to the many more highly educated and job-ready residents of the communities.

- Provide support services -- basic language skills and day care -- which allow residents to participate in more basic training programs and access the many entry-level jobs available in the community.

- Craft a longer-term commitment to provide opportunities for quality jobs to neighborhood youth.

From the standpoint of local employers and potential occupants of Olmsted Plaza, the survey of residents and the interviews with community organizations provides strong evidence of a unique and diverse labor force available in the surrounding community. Employers can find everything from skilled scientists, to computer technicians, to entry level service workers within walking distance.

TABLE 1

HOUSEHOLD COMPOSITION

Number of People in Household	All	Mission Hill	Fenway
One	42.7%	28.8%	52.1%
Two	36.6%	33.8%	38.7%
Three	8.0%	13.8%	4.2%
Four	7.0%	13.8%	2.5%
Five or More	5.5%	10.0%	2.5%
Households With Children Under Eighteen	13.5%		

TABLE 2

YEARS LIVING IN THE NEIGHBORHOOD

Two Years Or Less	16.0%
Three to Five Years	25.0%
Six to Ten Years	23.0%
Eleven to Twenty Years	15.5%
Over Twenty Years	20.5%

TABLE 3

RACIAL COMPOSITION OF RESIDENTS

	All	Mission Hill	Fenway
Black	20.8%	35.0%	8.6%
Asian	3.5%	6.4%	1.1%
White	75.7%	58.6%	90.3%
Spanish Speaking	15.2%	24.4%	8.3%

TABLE 4

AGE COMPOSITION OF RESIDENTS

Less Than Four Years	4.3%
Five to Eleven Years	4.8%
Twelve to Seventeen Years	3.0%
Eighteen to Twenty-Four Years	10.6%
Twenty-Five to Forty-Four Years	50.8%
Forty-Five to Sixty-Four Years	12.1%
Sixty-Five Years or Older	14.4%
TOTAL	100.0%

TABLE 5

EDUCATIONAL LEVEL OF RESIDENTS

	All	Mission Hill	Fenway
Post Graduate Degree	17.2%	13.4%	20.4%
Some Post Graduate Work	9.9%	8.9%	10.8%
College Degree	32.0%	28.7%	34.9%
Some College	14.8%	15.3%	14.5%
High School Degree	18.3%	19.7%	17.2%
Less Than High School Degree	7.5%	14.0%	2.1%

TABLE 6

HOUSEHOLD INCOME

	All	Mission Hill	Fenway
Less Than $10,000	9.1%	14.2%	5.6%
$10,000 to $19,999	24.8%	22.2%	26.7%
$20,000 to $34,999	26.7%	20.6%	31.4%
$35,000 to $49,999	18.9%	22.2%	16.7%
$50,00 or Higher	20.2%	20.6%	20.0%

TABLE 7

EMPLOYMENT STATUS OF ADULT HOUSEHOLD MEMBERS

	Number of Residents	% of All Household Members	% of Fenway	% of Mission Hill
Military Service	1	.3%	0	.6%
Retired	58	16.5%	17.9%	15.6%
Employed Full Time	225	63.9%	65.6%	61.8%
Employed Part Time Less Than 35 Hours Per week	19	5.4%	5.6%	5.1%
Full Time Homemakers	5	1.4%	.5%	2.5%
Full-time Students	26	7.4%	7.2%	7.6%
Unemployed Actively Looking For Work	9	2.6%	1.5%	3.8%
Unemployed Not Actively Looking For Work	9	2.6%	1.5%	3.8%
TOTAL	352	100%	100%	100%
Unemployment Rate: (Unemployed seeking work as a % of Civilian Labor Force. Does Not include students,military, retired,homemakers)	253	3.6%	2.1%	5.5%

TABLE 8

EMPLOYMENT BARRIERS

	All	Mission Hill	Fenway
A Member of Household Had to Give Up A Job Opportunity Because Unable to Get to or From Job	7.5%	8.8%	6.7%
A Member of Household Had to Give Up A Job Opportunity Because Unable to Find Quality, Affordable Day care	4.0%	8.8%	.8%
A Member of Household Had to Give Up A Job Opportunity Because Unable to Speak English Well Enough	1.5%	2.5%	.5%

TABLE 9

FUTURE PLANS

Likelihood Of Being Laid Off From Job In Next Year

	All	Mission Hill	Fenway
Very Likely	4.2%	10.7%	0%
Somewhat Likely	11.1%	8.9%	12.6%
Unlikely	84.0%	80%	87.4%
Actively Looking for Another Job	12.5%	12.5%	12.5%

TABLE 10

UNDERUTILIZED SKILLS OF RESIDENTS

Households Which Include A Member With Skills They Are Unable to Use In the Labor Market	30	15.3%
Skills Included		
Arts and Media:	13	
Technical and Professional	12	
Computer	4	
Medical research equipment	2	
Engineering	2	
Nursing	1	
Nutritionist	1	
Human Service	2	
Clerical and Administrative	2	
Management	3	
Service and Laborer	4	
Other	2	

TABLE 11

OCCUPATION OF RESIDENTS

	Number of Residents Responding	Percentage of Residents
Professional	96	43%
Health related	19	
Engineering/Technology	10	
Teaching (includes day care)	10	
Arts and Media	12	
Human services	10	
Accountant	6	
Other	29	
Managerial	30	13.3%
Technical Specialty Includes:computer programming,electrician, printer,technician, draftsmen	11	4.9%
Service Includes:cleaning, security guards, waitress/waiter, hotel workers	42	18.7%
Sales	6	2.7%
Administration includes general clerical workers	27	12.0%
Operators,Fabricators, and Laborers	9	4.0%
Self-employed	4	1.8%

TABLE 12

WHERE RESIDENTS WORK

Number of Employed Residents Who Work in the Longwood Medical Area	24	9.8%
In Neighborhood: includes Mission Hill, Boston University, Medical area, Fenway	36	19.4%
Downtown Boston: includes Financial District, Back Bay, South End	73	39.4%
Boston Neighborhoods: includes Roxbury, East Boston, Brighton, Dorchester, Jamaica Plain, Charlestown, North End	27	14.5%
TOTAL CITY OF BOSTON	160	73.6%
Boston Metropolitan Area	44	23.7%
Other	5	2.7%
TOTAL	185	

HUMAN SERVICE PROVIDERS INTERVIEWED

Parker Hill/Fenway Neighborhood Service Center: Antonio Prieta

Sociad Latino: Geraldo Acosta

Mission Hill Extension Tenant Task Force: Mario Alamo

Child Care Resource Center: Eve Birney

Bosline Council for Children: Sandy Farrow

Christian Science Center, Dept. of Community Affairs: Joan Copeland

Fenway Community Development Corporation: Mat Thall

Ellen Jackson Center: Jo Schneiderman

Aggassiz Community Schools: Joyce Ellis

Greater Boston Legal Services, Employment Sub-unit: Leonore Suarez

CHAPTER 3

LABOR FORCE NEEDS OF LOCAL EMPLOYERS

To benefit local unemployed and underemployed residents, job linkage funds could be used to match the needs of local employers with the needs of local residents. The Fenway/Kenmore community is home to several important institutional employers of Boston. These employers provide professional, technical, and unskilled jobs to residents of the entire metropolitan area. In addition to the institutional employers, a number of private manufacturing, service, and retail firms operate in the neighborhoods.

To understand the nature of labor force needs of local employers, Mt. Auburn Associates conducted surveys with 24 businesses and institutions. We analyzed the survey results by describing the printing and graphics industry, universities, hospitals and miscellaneous businesses.

3.1 The Printing\Graphics Industry

Employee Information

The seven companies surveyed in this category range in size from six employees to 175. The jobs are almost all full-time and all the companies considered their employment situation "stable." One company, however, recently reduced their staff from 125 to 100 by laying off part-time workers. All these companies considered over 90% (some said 100%) of their work force to be in the "skilled" category. All the companies reported only a small percentage of their employees living in the Fenway, if any. Usually fewer than half lived in the City of Boston.

The companies have traditional printing occupations represented in their companies along with other occupations like medical illustration, photography, color lab preparation, customer service, telemarketing, computer programmers, sales staff and clerical.

Information on wages is imprecise. Companies willing to give some information said that wages were tied to experience, not to specific occupations. They gave ranges like $7.50 to $30 an hour or $8 to $20 an hour. Those firms willing to divulge benefit information reported paying for health insurance and vacations. The largest company also had a dental plan, a 401-k plan, life insurance, and disability insurance. No firm offered child care benefits.

Recruiting Issues

No company reported serious problems filling positions. Only one of the six had a current job opening it was advertising in the Boston Globe. One company reported that, because other printers had recently closed, it was easy to get skilled workers who had been laid off. Another said that the hardest positions to fill were press operators and pre-press technicians, but that they have had good response from Boston Globe ads. None of the potential barriers to work (day care, language, transportation, or turnover) were reported as problems.

Due to the low percentage of entry-level and unskilled workers in the printing industry, there was not much demand anticipated in the next five years at this level. For skilled positions in the next five years, respondents said it was impossible to predict or that only one or two positions would be open. The only specific job categories mentioned were color lab technician, photographer, and illustrator.

Training Issues

All the firms reported doing some in-house training on an informal basis. Normally, firms hire someone with experience and skills, but will train the worker on the specific machinery or job specialty. For instance, the medical graphics firm hires an illustrator and trains the employee in the medical specialization. Two of the firms said they teach binding and other manual skills. One company mentioned that for the very large printing machines, they seek people who already have experience on them, because the work is too dangerous for inexperienced workers.

Four of the companies never used outside training and were not interested in doing so. One company was very interested and said that they had been trying for two years to get a technical school to set up an apprentice program or a cooperative program with them but the school was not willing to set up a program. This company also said that because they were highly specialized, the schools did not have the correct equipment to train students on, so training would have to be done at the firm. Another firm worked with Boston's EDIC which had trained people at the Humphrey center. The firm currently had one of these graduates on a trial basis. A computer graphics firm had used S.I.S. and Northeastern for computer and graphics skills.

3.2 Universities -- Northeastern, Boston University and Harvard Medical Area, Berklee College of Music, Wheelock and Simmons)

Employee Information

The six universities interviewed represent over 7,000 non-faculty jobs. Very few of these jobs, however, can be categorized as entry-level or unskilled. While Harvard Medical describes 10-20% of their jobs in this category, Boston University and Northeastern estimate less than 5%. A major reason is that universities hire students on work-study to fill low-level technical and clerical jobs like file clerks and stackers in the library. Another school reported that because their custodial jobs were unionized and the work force very stable, they rarely had openings in this field. The schools' job opening bulletins reveal very few, if any, jobs which do not require experience and considerable skills. Jobs that sometimes fall into the unskilled and lower semi-skilled positions include lab aides (such as glass washers), stock people, mail clerks, library assistants and custodians. The schools differ as to the skills they expect from certain job categories. For instance, one school may consider a receptionist to be a low-skill job. Northeastern, however, considers receptionist a job with considerable responsibility due to the contact with the public. A receptionist must know how to field inquiries of parents and students and help them get the information they need. The pay for unskilled jobs ranges from over $7 per hour to near $10 per hour with semi-skilled from $9.00 to $12.00 per hour. Employers pay the majority share for health plans and often fully pay for life insurance and disability plans. The benefits also include retirement plans, credit unions and vouchers for day care expenses.

A survey by MASCO in 1987 showed that out of Harvard's Medical and Dental Schools total employment of 1,181 employees, none lived in the Fenway and one percent lived in Mission Hill. Five percent of the Harvard School of Public Health's 983 employees lived in the Fenway and two percent in Mission Hill.

Recruiting Issues

Harvard Medical has trouble filling its specialized need of people with bachelors degrees in science and psychology to be research assistants. Otherwise, the biggest problem for all three universities was finding quality office support staff at all levels. As one university pointed out, universities need high-quality clerical help because professors want people with excellent English skills. Additional clerical skills desired include bookkeeping, data base knowledge and ability to answer the public's questions.

All the universities were at an advantage in attracting people with college degrees to do this work. For instance, recent graduates may stay on for a few years and work. The biggest advantages is that the universities offer tuition benefits for the worker, his or her spouse and children. So well-educated people may be secretaries for a few years while going to grad school at night or sending a spouse or child through school. At the Medical institutions, recent BAs may spend a year or two in staff assistant positions before graduate or medical school. The obvious problem is that these types of people do not see this work as a career and only stay a few years. The schools acknowledge the competitiveness of recruiting high quality clerical workers with other local industries, however, the down turns in high tech and other industries has made it easier to recruit secretaries recently. Northeastern reported that a year ago they had 40 secretarial openings and at present they only have 5. Not only is it easier to recruit people, but existing employees are less likely to leave if their opportunities are limited elsewhere. Also, in an "unstable" economy, people feel more secure working for a large established institution. However, no one knew how short-lived this supply of secretaries would be. Northeastern has worked with the Burdette secretarial school, having Burdette students do their co-op training at Northeastern and then often hiring them after graduation.

The salary scale at one university showed office support staff at the midpoint range of employment paying between $280 and $460 a week.

All the schools had day care centers. None of the other potential barriers were issues. However, Northeastern felt strongly that day care was *the* issue in employment for the 1990s. After all, day care was often the reason that workers with skills could not continue to work.

Literacy and language problems are sometimes an issue in hiring for maintenance jobs, but the big concern is the low-level English skills of recent high school graduates is so low. Most can't spell, take accurate messages or be helpful to the public, making them unable to take on clerical positions.

Training Issues

Most of the in-house training consisted of being trained by a supervisor on the job, especially for lab workers. For clerical workers, one university had a small training unit for computers, where employees could go for a half to full day extensive training session. Other times, employees are sent to places such as WANG to get computer training. Harvard University has a clerical training center in Cambridge where workers can get their skills upgraded. Universities tended to offer classes for employees in work-related issues such as computers, budgeting, etc. and offered tuition reimbursement for any courses taken at the university. Except for training programs that would produce high-quality clerical workers with excellent skills in word processing and dealing with the public, there doesn't seem to be a big need for outside training. Adequate training to produce such a worker would take at least a year. One school said that there were no good clerical training programs in the city that produced job-ready applicants. Boston University said that eventually they will have to do workplace language programs for ESL.

One university discussed hiring workers from public training programs and was not happy with the results. Workers were not of the quality expected by a university and were particularly lacking communication skills. The university said it has had good luck in hiring women with previous business experience who were returning to the job market and training them in computer use, but this population is decreasing.

Note: The Harvard Medical Schools were particularly interested in recruiting more neighborhood people as workers. It is only recently that the medical school has had responsibility for hiring workers separate from the Cambridge campus. The personnel office wants to use this opportunity to "be a better neighbor" to the community and do specific outreach to community residents, providing them with training so that they can have jobs above the janitorial level. Right now, they have a "serious affirmative action problem." They are considering programs such as cooperative measures with English High School and Roxbury Community College and would give graduates extensive skills training for lab and clerical jobs.

3.3 Hospitals -- Beth Israel, Children's, Brigham and Women's and Massachusetts Mental Health Center

Employee Issues

These four hospitals alone account for approximately 14,000 jobs. Less than 25% of the jobs are considered entry level or unskilled, usually housekeeping and custodial staffs, escorts, warehouse workers, dietary and some lab workers. Of the entry-level jobs, housekeeping starts at $5.75 an hour, medical records assistants at $6.70 and laundry aides at $5.97 an hour. Another hospital reported entry level salaries starting at $6.50 to $7.50 up to a maximum of $10.50. Semi-skilled positions started at $7.00 - $9.50 with a maximum of $13.50.

According to MASCO's 1987 survey, six of the major Longwood hospitals (Children's, Beth Israel, Womens and Brighams, Deaconess, Dana-Farber Cancer Institute and the Joslin Diabetes) had a total of 19,243 employees, 6% of which lived in the Fenway and 2% in Mission Hill.

Recruiting Issues

The nursing shortage seems to have eased for now. The difficult areas currently are medical secretary, radiographers, medical technologists, x-ray technicians, pharmacists, and dental hygienists. It is hard to fill spots for therapists in occupational, physical and respiratory therapy, but there aren't that many openings, so large scale training isn't warranted. Right now, there is not a problem getting entry level workers, a year ago there was.

It is also a problem finding qualified office support staff. Language and literacy is an issue, not just for people who may not speak English as their native language, but also for those who do. Lack of basic skills is prevalent and many candidates for office jobs can not write adequate memos or letters or communicate well on the telephone. Job readiness training is needed. One major hospital estimated that 10 entry level jobs a week will be open continuously for the next five years. Another saw the increase in the next five years coming in the "hands-on" patient care jobs, such as nursing, respiratory and x-ray technologists because not enough people will be going to school to learn these skills. One personnel manager said that the hospitals will learn to live with the clerical shortage, but hands-on care is crucial.

While most people with language and literacy problems are in entry level jobs, some are in semi-skilled because they performed the job in the country that they came from. Even in low-skilled jobs, it is a problem if they can not read or speak English at all. In hospitals, one has to be able to read hazardous waste signs, labels on lab samples and communicate with fellow workers.

Training Issues

Hospitals usually offer ESL and GED programs at the hospital and do needs assessments to help workers upgrade skills. One hospital reported that recent high school graduates tested at third grade reading levels. Brigham and Women's did a back-to-work program for women who had been out of the work force to update their skills, in cooperation with the Brookline School System, but it was very expensive and they had to discontinue it.

Hospitals used Dimock Community Health Center program for training (has a surgical technician training program) and hired clerical workers out of Training Inc, which is sponsored by the YWCA and lasts for 14 weeks, from the Boston Technical program and ABCD's job training program.

Children's Hospital used $50,000 in linkage money to develop a program with English High School (which used to be nearby and moved to Jamaica Plain.) Program takes 20 seniors and 20 juniors and gives them after school rotations in the hospital and summer jobs. These are at-risk kids who go to the special Fenway Program of the high school, which is geared to students in danger of dropping out. They learn job skills in the offices hardest to hire entry level workers. Upon completion of the program, they are guaranteed an interview for employment. Childrens has hired some of the graduates and considers the program a success as none of the participants dropped out of school. They are looking for money to continue the program.

Children's Hospital, because of their specialized pediatrics, might have to do additional training of workers who come out of outside training programs. For instance, drawing blood from a premature infant would not be normally taught in a general blood drawing program.

Collaborative efforts in training are being done by all the teaching hospitals. One such program, Project Healthcare, is being done in conjunction with the Boston PIC. Each hospital enrolled marginal employees with "potential" and sends them once a week to a program at BCH to improve their job readiness skills. The teaching hospitals are considering other programs to do jointly, most are geared to getting high school students interested in the allied health professions: a video describing the allied health professions, career fairs, mentor programs, development of career kits, sending speakers to high schools and community colleges.

Issue: Both universities and hospitals face very competitive times as they compete for students and patients. If they are not efficient and responsive to students, parents, patients and the public at large, they will lose business. Personnel directors feel that this involves many of the office support staff who must be able to deal politely and knowledgeably with the public's questions and be able to guide them throughout the bureaucracy of a large university or hospital.

3.4 Miscellaneous Businesses

Hotels

The Boston Sheraton was the only respondent. In the high season of April through December they have 900 employees. January through March many of the staff is limited to work part time. Thirty percent of the staff is considered unskilled, 30% semi-skilled and 40% skilled. Of the total employees: 50% are in the food service; 30% in housekeeping and front desk functions and the remaining are in engineering, accounting, sales and the executive office. The hardest positions to fill are housekeeping, food service and PBX telephone operators. Last year's turnover rate of 30% was considered very low. There are jobs where English is not needed, such as laundry and housekeeping. The hotel offers full-time ESL instruction, training for working the front desk, management training seminars, hotel training seminars and $1,000 tuition reimbursement for career related classes.

Hotels that are unionized can work with Local 26 of the Hotel Workers Union for language education. The Local just started an education program that helps workers with their writing skills. It is not linked to any specific job training. Some of these workers have difficulty in the ESL classes, because they aren't literate enough in their own language to follow the ESL manuals. The Local questions whether hotels discriminate against workers with accents, even if they speak and understand English well, the hotels may keep them out of positions with heavy public contact.

Retail

This is based on an interview with the Boston University Bookstore Mall in Kenmore Square which has over 300 employees. The majority, 60% are part-time positions and extra people are hired in September (for the school rush) and Christmas seasons. Forty percent of the jobs are retail and another 40% are administrative and clerical. Sales staff make $5-8 an hour; packers and shippers $7-10 an hour; maintenance and security and office and administrative both range from $15,000 - $30,000 a year. About half the employees live in the area. The most difficult positions to fill have always been the secretarial and administrative assistant jobs, but this has changed in the last year and they do not have any openings now. Turnover level is 130%. In-house training consists of customer service, cash register training and loss prevention training. In the next five years, middle-management positions will need to be filled as department managers and operations support staff. Current training needs are for management training programs and secretarial support staff training.

Recreation

The YMCA has about 100 employees, 60% of which are part-time. Employees break down into 10% maintenance and security; 30% administrative and 60% fitness, sports, physical education trainers. Benefits include 50% of health insurance paid, life insurance, an optional retirement plan, optional dental plan and opportunity to use the Y day care facility at a discounted rate. It was estimated that 25% of the employees lived in the neighborhood. Positions most in demand were for "middle managers" with basic administrative and accounting skills. The highest turnover rates were in security, maintenance and housekeeping. The Y runs ESL and Training Inc., (a clerical training program) for the general public and Y employees can take the programs.

Assorted Businesses

Four businesses fall into this category. These add up to approximately 245 jobs, practically all full-time. One company had recently closed their warehouse at this location, resulting in the layoff of low-skilled workers and was about to also move its manufacturing component (their Fenway space was on a second floor and difficult for warehousing and manufacturing). Job occupations in these firms included mechanics, secretaries, drivers, tire changers, manufacturers, inventory, accounting and basic office help, computer reservation clerks and the specialized trade of neon light benders and installers. None of the companies considered day care, language and literacy to be a problem. Parking for employees was cited as a major problem by several businesses. One business said the neighborhood was perceived as "unsafe" and that employees walked each other to cars at night. It was also mentioned that people would rather work downtown than in Kenmore Square and that some people answering ads declined setting up interviews when they found out the location.

CHAPTER 4

BIOMEDICAL JOB OPPORTUNITIES FOR COMMUNITY RESIDENTS

The biomedical industry is an important and growing sector of the Boston metropolitan economy. Components of the biomedical industry include biotechnology (i.e. genetic and cell engineering), pharmaceuticals, and medical instruments. The Boston area is considered one of the nation's centers for biotechnology, with over 50 firms in operation. Moreover, Boston area academic centers and teaching hospitals have significant budgets for biomedical research. In fact, the Boston area captures more biomedical research funding from the U.S. government than any other metro area in the U.S.

According to a Boston Redevelopment Authority survey of hospital biomedical research, seventeen hospitals in the City of Boston conduct biomedical research, and two more are planning to open research facilities in the next five years. Moreover, the hospital biomedical research facilities are undergoing explosive growth. Space needs are expected to grow from 2 million square feet in 1987 to 3.8 million in 1992. The BRA estimates that in 1987 there were 7,623 total people employed in hospital biomedical research in the city or 6,050 full-time equivalents. The BRA survey indicates biomedical research employment will grow 52% between 1987 and 1992.

The biomedical field offers a wide variety of job positions. Table 13 shows an excerpt from "Careers in Biotechnology," published by the Industrial Biotechnology Association. The chart and job descriptions provides an illustration of the range of occupations in the field.

At the R&D stage, many biotechnology jobs require highly educated scientists, typically people holding PhDs. Yet, there are numerous jobs for supporting laboratory technicians with a Bachelor of Science Degree or Associates Degree. According to the U.S Office of Technology Assessment, the occupational structure of the industry has changed with growing maturity. Production and quality control positions have become more numerous as the industry moves from R&D to production. There has also been a trend toward hiring technicians rather than PhD level researchers. The move to production has also increased jobs for managers and marketers.

At present, little data exist on the distribution of jobs by type within the biomedical industry. The only source of such information available is from a survey of biomedical firms recently completed by the Boston Redevelopment Authority. This survey is very relevant to the Olmsted Plaza facility. Because many Boston-area biomedical companies contract with the region's hospitals for research, the for-profit and non-profit sectors are not independent of one another.

TABLE 13

Companies engaged in biotechnology-related research and development may vary in the positions they offer, the education and experience required for similar positions, and the responsibilities of staff at particular job levels. The job categories described below are intended to give a general idea of the positions existing within the industry.

RESEARCH

Lab Assistant I
Lab Assistant II
Lab Assistant III
Research Associate I
Research Associate II
Research Associate III
Research Associate IV
Post Doctoral Research Scientist I
Post Doctoral Research Scientist II
Scientist I
Scientist II
Scientist III
Scientist IV
Associate Scientific Director
Scientific Director
Project Manager I
Project Manager II
Technical Services Manager

QUALITY CONTROL

QC Inspector I
QC Inspector II
QC Analyst I
QC Analyst II
QC Engineer
Safety Specialist
Safety Manager
QC Supervisor
QC Manager
Director, Quality Control

CLINICAL RESEARCH

Clinical Programmer I
Clinical Programmer II
Clinical Data Specialist I
Clinical Data Specialist II
Clinical Research Associate I
Clinical Research Associate II
Clinical Research Associate III
Biostatistician I
Biostatistician II
Clinical Research Manager
Clinical Data Systems Manager
Associate Director, Clinical Research

CLINICAL RESEARCH (cont.)

Director, Clinical Research
Animal Handler
Animal Technician I
Animal Technician II
Toxicologist
Technical Writer I
Technical Writer II

REGULATORY AFFAIRS

Documentation Coordinator
Documentation Specialist I
Documentation Specialist II
Regulatory Affairs Specialist I
Regulatory Affairs Specialist II
Regulatory Affairs Specialist III
Regulatory Affairs Manager
Director, Regulatory Affairs

MANUFACTURING/PRODUCTION

Manufacturing Technician I
Manufacturing Technician II
Manufacturing Technician III
Assay Analyst I
Assay Analyst II
Manufacturing Research Associate I
Manufacturing Research Associate II
Manufacturing Research Associate III
Instrument/Calibration Technician I
Instrument/Calibration Technician II
Chemical Engineer I
Chemical Engineer II
Chemical Engineer III
Process Development Scientist I
Process Development Scientist II
Process Development Scientist III
Process Development Engineer I
Process Development Engineer II
Process Development Engineer III
Process Engineering Manager
Pilot Plant Manager
Facilities Manager
Manufacturing Manager
Associate Director, Manufacturing
Director, Manufacturing

Position List (cont.)

INFORMATION SYSTEMS

Library Assistant I
Library Assistant II
Assistant Librarian
Librarian
Scientific Programmer Analyst I
Scientific Programmer Analyst II
Scientific Programmer Analyst III
Scientific Systems Manager
Director, Scientific Information Systems

MARKETING/SALES

Market Research Analyst I
Market Research Analyst II
Market Research Analyst III
Market Research Manager
Product Marketing Manager
Director of Marketing
Sales Representative I
Sales Representative II
Sales Representative III
Regional Sales Manager
National Sales Manager
International Sales Manager
Customer Service Representative I
Customer Service Representative II
Technical Service Representative I
Technical Service Representative II
Bus/Corp Development Research Analyst I
Bus/Corp Development Research Analyst II
Bus/Corp Development Manager
Director, Bus/Corp Development

ADMINISTRATION

Technical Recruiter I
Technical Recruiter II
Patent Attorney I
Patent Attorney II

Sample benchmark job descriptions from the research family (a family is a group of jobs which perform similar activities, each position being at a different skill or responsibility level.)

Lab Assistant 1 Responsible for performing a variety of research/laboratory tasks and experiments under general supervision. May make detailed observations, analyze data and interpret results. Maintains laboratory equipment and inventory levels for laboratory supplies. May write experimental reports, summaries and protocols. Education: Requires a high school diploma or equivalent experience with scientific background. Experience: A minimum of 0 to 1 year of relevant laboratory experience.

Research Associate 1 Responsible for research and development in collaboration with others for products and projects. Makes detailed observations, analyzes data and interprets results. May exercise technical discretion in the design, execution and interpretation of experiments that contribute to projects. Prepares technical reports, summaries, protocols, and quantitative analyses. Maintains familiarity with current scientific literature. Education: Requires a BS in a scientific discipline or equivalent. Experience: A minimum of 0 to 1 year of related laboratory experience.

Post Doctoral Research Scientist 1 Responsible for the design, development, execution, and implementation of scientific research in collaboration with a larger research team. Investigates the feasibility of applying a wide variety of scientific principles and theories to potential inventions and products. Maintains substantial knowledge of state of-the-art principles and theories and contributes to scientific literature and conference. Education: Requires a PhD in scientific discipline. Experience: Experience preferred in a research environment. Demonstrates potential for technical proficiency, creativity, collaboration with others and independent thought.

Scientist 1 Responsible for the design, development, execution, and implementation of scientific research projects in collaboration with a larger research team. Investigates the feasibility of applying a wide variety of scientific principles and concepts to potential inventions and products. Maintains substantial knowledge of state of-the-art principles and theories and contributes to scientific literature and conferences. May coordinate interdepartmental activities and research efforts. Uses professional concepts and company policies and procedures to solve a wide range of difficult problems in imaginative and practical ways. Education: Requires a BS or MS in a scientific discipline or equivalent. Experience: A minimum of 0 to 3 years experience in a research environment. Demonstrates potential for technical proficiency, scientific creativity, collaboration with others and independent thought. Post doctoral will serve as experience.

Scientific Director Responsible for directing the activities of an entire scientific/engineering group in the research, design and development of an organizations products, projects and programs. Conducts and collaborates with others on basic research relevant to long-term objectives and concerns. Writes and reviews manuscripts for publication. Develops strategies to ensure effective achievement of scientific objectives. Monitors and evaluates completion of tasks and projects. Develops budgets for capital expenditures and labor. Participates with other top managers to establish company policies. Makes final decision on administrative or operational matters. Education: Requires a PhD in a related scientific discipline or equivalent. Experience: A minimum of 10 years related experience. Must be recognized for individual scientific achievements and have management experience.

Project Manager 1 Responsible for providing project oversight in order to maximize the effective use of project resources. Facilitates information flow between team members, the project leader, senior management and the corporate client. Maintains positive interaction with the client and initiates and coordinates the decision making process. Direction provided is administrative rather than technical and supervision is indirect rather than direct. Education: Requires a BS or MS in a scientific discipline or equivalent. Experience: A minimum of 3 to 5 years industrial experience in multiple disciplines. Must have previous experience managing projects.

According to BRA research, the biomedical field has jobs in three basic areas:

- Professionals with a college degree, typically an advanced degree;
- Technical occupations requiring training, like lab technician; and
- Support occupations requiring minimal skills.

Table 14 sets out the number and distribution of hospital research jobs in 17 Boston area hospitals in 1987 by level of education of the jobholders. For the most part, the research scientists and doctors have advanced degrees; lab technicians, computer technicians and administrators have bachelor's degrees; and secretaries, clerks, janitors and "other" have an associate's degree, a high school diploma or did not finish high school. Put another way, 45% of job holders have advanced degrees, 31% have a college degree, and 24% have an A.A. degree, a high school diploma, or did not finish high school. For jobholders without a bachelor's degree, 61% were secretaries and clerks, 17% were lab technicians, 12% had "other" jobs, and 8% were janitorial staff. BRA research reveals that industry wage scales reflect the diversity of jobs in the industry with salaries ranging from $15,000 for janitorial staff to $67,000 for doctors.

Eighty-four percent of the lab technicians have a B.S. degree. According to Roadrian Davidson of the Bay State Skills Corporation, the majority of lab technicians without a bachelor's degree have A.A. degrees. Some lab technicians come directly out of high school, but even these people receive additional initial training (e.g., on sterilization techniques) at the job site.

Nancy Kraybill of the Boston University Medical Center says that a B.S. is a requirement for lab technician jobs at that institution. She thought 5% of the lab technician jobs, those involved in repetitive research steps, could be filled by a bright people with an A.A. degree or H.S. diploma. She points out that innovative lab research requires independent thinking, action and creativity, and that lab experience at the university level is important for training the type of people that B.U. needs. Ms. Kraybill also thought that, based on her contacts, the for-profit biotech firms had the same type of requirements, for the most part, in their research labs.

Bay State Skills Corporation has initiated a Biotechnology Initiative, through which it provides funding to metro area universities for college degree programs in biotechnology. As part of this effort, Davidson has interviewed a number of for-profit biotech firms in the area regarding their occupational structure. She has found that firms which manufacture in addition to performing research have a much higher percentage of personnel without any kind of college degree, primarily in production-type functions. For instance, in one 100-person firm, 60% of the workforce does not have a college degree.

TABLE 14

Hospital Research Employment
By Education Level and Occupation

			Jobholders with:		
Occupations	Medical Research Employment	Percent Employed	Advanced Degrees	Bachelor's Degree	High School or A.A.
Research Scientists	2,090	34.5%	1,973	117	0
Doctors	755	12.5%	755	0	0
Lab Techs	1,598	26.4%	0	1,347	252
Comp tech	82	1.3%	0	82	0
Admins	331	5.5%	3	309	18
Secs/Clerks	892	14.7%	0	0	892
Jan. Staff	116	1.9%	0	0	116
Other	187	3.1%	0	6	181
Total	**6,050**	**100%**	**2,732**	**1,860**	**1,458**
Percent	100%	NA	45.2%	30.8%	24.1%

Note: Employment is based on Full Time Equivalent Employment data provided by 12 hospitals and extrapolated to the total of 17.

Source: BRA Research Department, Medical Industry Survey, 1987.

The growing need for highly skilled employees in medical instrumentation, traditional pharmaceutical R&D firms, and biotechnology corporations has led to the development of new programs at a number of universities and community colleges in New England. In fact institutions in Massachusetts have been innovators in the area of training in the biotechnology field. As just a few examples: the Worcester Polytechnic Institution has developed a new course in bioprocess technology with the Bay State Skills Corporation. This is the first program of its kind in the U.S.. Tufts University has developed an interdisciplinary Biotechnology Engineering Center which offers post-graduate degrees in biotechnology for working professionals. And, of most relevance to the Olmsted Plaza Project, Boston University has an undergraduate program in biomedical laboratory and clinical sciences. Students in this program can get either a Bachelor of Science or an Associates Degree and are trained in such positions as research technologist, lab technician, medical technologist and assistant scientist. The Boston University program is one of only seven programs identified by the U.S. Office of Technology Assessment which offers Associate of Applied Science Degrees in a specialized biotechnology program (another one of the seven, Becker Junior College, is located in the Worcester area).

Another area of innovation in training has been in trying to reach secondary schools. Several programs, most notably one in Stony Brook, New York, have been designed to teach biotechnology techniques to high school teachers. The North Carolina Biotechnology Center also has a project to introduce biotechnology into the high school curriculum.

As many cities and states invest in the development of the biotechnology industry, the availability of both highly skilled professionals and skilled technicians will become a critical factor in the growth of the industry at different locations. With its medical centers and universities, the city of Boston already has the critical infrastructure to become an international center of this industry. Ensuring that a high quality, trained labor force is prepared for the jobs in this growth industry will be of prime importance in shaping the industry's future in the city.

CHAPTER 5

A JOB LINKAGE STRATEGY FOR OLMSTED PLAZA: MODELS AND OPTIONS

5.1 Introduction

Job linkage funds from the Olmsted Plaza development provide an opportunity to address barriers which prevent unemployed and underemployed residents from attaining good jobs in health care, biotechnology, and other industries providing employment either directly in the development or in the surrounding community. Strategies which capitalize on these opportunities must match the needs of neighborhood residents with the needs of neighborhood employers, including potential occupants of the Olmsted Plaza development. By targeting new, higher-quality jobs to residents of the Fenway and Mission Hill neighborhoods, not only can those communities most impacted by the development receive some of the benefits of the linkage funds, but some of the potential impacts of the development can be mitigated. For example, to the extent that the development draws its work force from local residents, the traffic impacts of the development can be reduced.

Health care and biomedical jobs should be a particular area of emphasis given the likely composition of jobs in the development as well as the growth of this field in the Longwood Medical Area and the City of Boston generally. The developers of Olmsted Plaza estimate that biomedical related research and development will take up about 400,000 square feet of the project and provide about 1,200 jobs. Clinical facilities are estimated to occupy an additional 125,000 square feet and employ an additional 500 workers. Moreover, according to Boston Redevelopment Authority projections, over 4,500 new jobs will be created in the next four years due to expansion in health care and medical research. Over 85% of the jobs providing an average annual salary of at least $24,000 will require a minimum of one year of post-secondary training.

The infusion of linkage funds, combined with the accompanying publicity, can begin to address some of the structural problems which currently exist in the local education and training environment. While not limited in scope to the Fenway/Mission Hill areas, linkage benefits can be targeted to these areas, many of whose residents are current or potential employees of the nearby Longwood Medical institutions.

Certain principles have guided the development of options for the use of the job linkage funds generated by Olmsted Plaza:

1. *The linkage funds should be used as a catalyst to leverage other public and private funds.*

2. *The linkage funds should support a mix of efforts which meet both immediate and longer-term employment and training needs.*

3. *The funds should be used to enhance existing employment and training efforts rather than to create entirely new programs which are not integrated into the existing system.*

4. *The funds should be used to bring the many players in the human service and employment and training field together to work cooperatively.*

5. *Fenway and Mission Hill residents, while not the only beneficiaries of the linkage funds, should be a prime target for any efforts supported.*

6. *In light of the social and economic diversity of the Fenway and Mission Hill neighborhoods, funds should be used to address a range of "clients" from the long-term unemployed to currently employed residents who want to upgrade their technical and professional skills.*

7. *The funds should not be spread too thinly. There should be some concentration of resources in order to ensure that the funds have a measurable impact.*

8. *Community organizations and human service providers in the Fenway and Mission Hill neighborhoods will have to play an active role in informing local residents about any programs developed as part of the jobs linkage strategy.*

We propose initiatives in the following specific areas:

- Health care-related jobs
- Training for biomedical research
- Basic job readiness and employment support services
- Child care training
- Training for the printing trades
- Training in Low-Skill Jobs for Handicapped Workers

5.2 Health Care-Related Opportunities

Given the proximity of the Fenway and Mission Hill neighborhoods to the almost 20,000 jobs in the Longwood Medical Area, training opportunities in health-related professions are a natural focus of job training efforts with linkage funds from Olmsted Plaza. Current shortages in certain health care occupations and the increasing training requirements for many of these occupations mean that expansion of training in this field can be of benefit not only to Fenway and Mission Hill residents but to medical institutions and job-seeking residents throughout the city.

1. Public Vocational Education: Despite past, current, and projected vacancies in nursing, allied health, and technical areas in health care, only one percent of Boston Public School graduates have chosen careers in health annually since 1978. The need to

revamp the vocational-technical education system, particularly in the health-related areas, is recognized by educators, community residents, and potential employers across the city, including the Longwood Hospitals. Linkage funds could be utilized to research, plan, and develop a model for the Boston Health Careers Academy.

The model for a Health Careers Academy has been discussed with great interest by Mayor Flynn, officials from the Boston Redevelopment Authority, the Private Industry Council, members of the School Committee, community residents, and leaders from the health care industry. The designation of linkage funds to "seed" the project would act as a catalyst to convene the various interested parties in order to focus on a specific project, thereby addressing many of the systemic barriers to Boston residents' sharing in the growth in the health care sector.

The target populations served by the Academy would include high school students, dropouts, working parents, potentially displaced health care workers, and unemployed teens and adults.

Key components of the Academy would include:

a. Involvement of employers, unions, and higher education in curriculum development, on-site training, and sharing of state-of-the-art equipment.

b. Accelerated learning: In order to participate in technical, paraprofessional, and professional training, students need to establish baseline competencies in reading and computing. Currently, according to several local community colleges, approximately half of all incoming first-year students read at the seventh-grade level or lower.

c. Market-driven programs: The involvement of employers, unions, and education policy and planning officials would insure that career offerings were consistent with current analyses of the job market and high job growth areas.

d. Access to day, evening, and weekend programs for in-school, unemployed, and underemployed Boston residents: The Humphrey Occupational Resource Center is currently operating at less than 30% of its designed capacity as a vocational-technical school for high school students. Although it is a state-of-the-art physical facility which includes a health training center, the vast majority of Boston residents have limited or no access to its resources. There are limited adult offerings, and generally the facility is closed during late afternoon and evening hours, during which many working adults could most easily attend classes. In addition, the facility historically has been closed during summer months when entire "semesters" could be accommodated.

   Linkage funds could be utilized to develop collaborative HORC "downtime" programs which would attract working parents, unemployed teens, and underemployed adults. For those individuals for whom day care and other services would be necessary, linkage funds could be utilized to develop such services.

2. Public-Relations: The existence of public perception, exacerbated by the AIDS crisis, that health care jobs, particularly in patient care and laboratories, are dangerous and thereby unattractive, is a real barrier to Boston residents' participating in career training. Linkage funds could be utilized to develop media materials which would promote high-growth careers in health and medical research, as well as promote the programs of the Health Careers Academy.

3. Workplace Education: The Conference of Boston Teaching Hospitals (COBTH) has developed a project, funded by linkage funds through the Neighborhood Jobs Trust, which upgrades the skills of workers from thirteen teaching hospitals in order to train them for jobs in high-demand areas. Currently, programs are in place to train Third-Party Billers and Medical Records Coders. New programs building on this collaborative approach need to be developed, including programs to train Radiology Technologists (17% local vacancy rate), ultrasound therapists (13% local vacancy rate), respiratory therapists (10.5% local vacancy rate), and medical technologists (7% vacancy rate) (Mass. Hospital Association, July, 1989).

Many Boston residents currently work in entry-level service jobs in the health care industry. Due to cost-containment trends, these positions are increasingly at risk for elimination; however, as many of these employees have proven good work habits and a commitment to serving the neighborhoods in which the hospitals are located, strategies to provide skills upgrading and career mobility can be devised utilizing linkage funds. Most of the high-vacancy categories above can be attained through two years or less of post-secondary training.

A potential win-win opportunity exists for hospital collaborations with community colleges and community-based health care providers. Community colleges such as Roxbury, Bunker Hill, Mass. Bay, and Middlesex, have been hit hard by state budget cuts and have had to lay off part-time faculty who staff many of the high-demand training programs. Dimock Community Health Center, a community-based health care training provider in Roxbury, has established a strong record in health careers training for the low-income, and is currently under contract with COBTH to train low-level hospital employees as third party billers and medical record corders. Dimock is currently faced with reductions in state funding combined with increased demand for training as community colleges cut back on their programs. The infusion of linkage funds into the collaborative development of workplace education programs which incorporate career pathways, job restructuring, and cross-training into the human resource structures of health care institutions could form the basis of a national model of health-care manpower development.

Conclusion

By focusing the linkage dollars for job training along these lines, we could help to catalyze numerous positive outcomes in health care related fields:

1. The focus provided by this proposal could create the impetus for the Neighborhood Jobs Trust Board to convene all of the interested parties, including neighborhood groups, city officials, health care and biotechnology industry representatives, and educators, to address the gaps in health-related training in a coordinated fashion. COBTH should be a key participant in this effort. Options for project oversight and implementation include: the formation of a vocational directorate or authority separate from the Boston Public Schools or city government to coordinate activities; formation of a health care manpower steering committee reporting to the Jobs Trust Board, which would develop an RFP for services according to specifications developed from this proposal; or, by requirement of a Jobs Trust RFP, pilot projects which included public/private partnerships and participation of at least one employer and one training institution.

2. The recent history of health careers training in Boston is characterized by its fragmentation of initiatives, and lack of coordination. The linkage dollars would provide needed momentum for a coordinated effort to address problems which, at this point, are nearly universally recognized by the various parties.

3. The linkage money, functioning as "seed" dollars for innovation, would attract other funders, including local and national corporations and foundations, to participate in an exciting attempt to simultaneously address urban economic development issues and health industry manpower shortages. Linkage funds could be used to develop an implementation plan for the Academy and to establish a few pilot projects at Dimock Community Health Center, the Humphrey Occupational Center, Roxbury Community College, or other appropriate training providers, based on the consensus of the coordinating body. A task force composed of key leaders among the parties mentioned above should be convened to conduct initial planning for the Academy.

5.3 Job Readiness, Literacy and ESL Training

For many Boston residents, including a significant number of Fenway and Mission Hill residents, the inability to read and write in English is a significant barrier to employment, training, and career mobility. This is particularly true of Hispanic and Asian residents. These potentially good workers are either stuck in dead-end jobs at the bottom of the career ladder or are unemployed; their status in the work force is transient and precarious. Health care service level jobs, traditionally seen as "gateway" jobs for immigrants and new entrants into the work force, contain a preponderance of minorities and non-native English speakers in the local health care industry.

Once again, cuts in job training, literacy, ESL, and adult education programs, community college budgets, and the Commonwealth's Gateway Cities project have left huge gaps in the education infrastructure. Linkage funds could be used in at least two ways to supplement existing resources for job readiness, literacy and ESL training.

First, support for literacy and ESL training could be tied to some of the specific initiatives described above to develop career ladders in the health care professions. Second, support for job readiness programs could be used to prepare hard-to-employ workers for jobs in the health professions or in the Olmsted Plaza development itself.

1. ESL and Literacy for the Health Professions: Linkage resources could be committed, either through the Boston Health Careers Academy, or through the various career ladder programs offered at the workplace, to focus on health care workers at risk of displacement, or already laid-off, to enhance their literacy and English language skills, and strengthen their .

These literacy and ESL courses would be prerequisites for participating in Health Careers Academy skills training programs, and could incorporate innovations in work-related curriculum such as ESL/Medical Terminology and Overview of Laboratory-related Functions. By incorporating the programs into the workplace, employers would see their value in retention of employees, improved morale, and greater productivity. For participants, whether at the workplace or in the Health Careers Academy, successful completion of these entry-level academic programs would improve their marketability and access to training for high-demand jobs in health care and medical research/biotech.

2. Job Readiness Training: Linkage resources could also be committed to programs designed to provide basic job readiness training for hard-to-employ workers in the Fenway and Mission Hill neighborhood. Job readiness programs educate prospective workers on the fundamental skills and qualities needed to obtain and hold a job, including basic reading, writing and computational skills, work habits, grooming and nutrition, and relationships with co-workers and superiors. This training is particularly important for long-term AFDC recipients and others who have been unsuccessful at holding steady employment. For these individuals, it is almost always a prerequisite for training in specific occupations.

Linkage funds could be used to support job readiness training as preparation for careers in the health care professions. Such training can both open new career paths for low level health career workers and create opportunities for new entrants in the health care field. Two established programs are already providing job readiness training which could be expanded in conjunction with initiatives by the Health Careers Academy. These are the Dimock Community Health Center, which teaches basic job skills in conjunction with its health occupations training, and the Fenway Program at Boston English High School, which has established a collaborative program with Children's Hospital to train at-risk high school students in entry level hospital positions. Both of these programs are seeking additional funding to maintain and expand services.

A linkage-funded job readiness program could also be aimed at filling entry level jobs in Olmsted Plaza and targeted to low-income Fenway and Mission Hill residents (for example, residents of the Mission Hill projects). A model for such a program is provided by the Copley Place development. The developers of Copley Place entered into a contract with Inner City, Inc. and United South End Settlements to provide job readiness training for 60 South End and Roxbury residents, who were then placed in positions with Copley Place tenants. Inner City, Inc., a Roxbury-based subsidiary of Poloroid, has a 21-year track record providing this form of training, and is located on Columbus Avenue in close proximity to the Fenway and Mission Hill neighborhoods. The development of an agreement between Olmsted Plaza Associates and Inner City thus offers a promising avenue for establishing such a program.

5.4 Training in Biomedical Research

1. Use of Olmsted Plaza as Site for Proposed Bay State Skills Corporation Biomedical Technology Training Program. The Bay State Skills Corporation is planning to develop an associates or certificate degree program in biomedical technology for high school graduates. It is currently undertaking a study to identify occupational needs in this field, including in-depth interviews of the hospitals, universities and firms involved in this field. The goal is to develop a generic training program that will meet the occupational needs of employers. There will be no income ceilings for students who attend this program, unlike most other BSSC-sponsored programs. Bay State Skills will choose a university or employment and training organization to sponsor this new program. If the program is not located at the site of the sponsoring agency, new space will be needed. Given the location of the Sears site, the possibility of locating this program in the new development is worthy of further consideration. Further communication between the developer and Bay State Skills should take place as the ideas for the training program take shape.

2. Establish a Biomedical Occupational Endowment for the Fenway and Mission Hill Neighborhoods. Whether or not a training program in biomedical technology is located on the Olmsted Plaza site, this form of training can provide good employment opportunities for graduating high school students as well as currently employed workers who want to upgrade their skills. These opportunities are likely to expand greatly if the potential for growth of the biomedical field is realized. In addition to the proposed BSSC program, Boston University has associates and bachelors degree programs for entry level technicians in the biomedical field. Jobs linkage funds could be used to establish an endowment to purchase slots in this or other biomedical education programs for qualifying low- and moderate-income Fenway and Mission Hill residents.

5.5 Child Care Training

As earlier sections of this report indicate, lack of child care is a serious impediment to employment for many low-income families, particularly single-parent families. The set-aside of space in Olmsted Plaza for child care facilities will help to address this problem. The presence of this facility can also be used to provide job training opportunities for child care workers. Wheelock College, less than a block from the Sears site, is currently developing the Child-Care Training and Internship Program, an innovative program designed to qualify participants for full-time employment as child-care teachers. The program has the dual objective of providing opportunities for neighborhood residents to enter the child care field, and addressing the problems of staff shortages and turnover faced by many child care providers. The program is oriented to individuals with no previous experience in child care, including graduating high school students, and new mothers entering or reentering the work force. The program is designed to help participants move up the career ladder through a combination of education, experience, and ongoing feedback.

The child care center in Olmsted Plaza could be used to provide field training for participants in the Wheelock program. In addition, jobs linkage monies could be used to underwrite a portion of the program cost.

5.6 Printing Trades

The printing industry is a good possibility for training Fenway residents. Not only is it a well-paying profession (In 1987 EDIC estimated that printing firms in South Boston had an average annual wage of over $28,000), with many positions in the semi-skilled and skilled categories, but the industry already has a presence in the Fenway and is expected to do well in the City of Boston in the coming years. According to a 1987 report by the Division of Employment Security, employment growth in the printing industry is expected to be 10% between 1984 and 1995, far out pacing the performance of the manufacturing sector overall. In addition, compared to other manufacturing industries, printing has a relatively large share of skilled positions. It is also considered an industry with "upward mobility" because of in-house training for more skilled positions.

Quality training is a crucial issue in the printing industry. Companies want to hire people already skilled in using the machinery. Job skills in one sector of the printing industry may be different from the other sectors, but the skills are usually transferable. Also, printing technology has changed dramatically. According to DES, technological innovation is changing the nature of skills required and some traditional training methods, "while on-the-job training is still important in most skilled printing occupations, workers may also benefit from vocational or post-secondary technical school training." The apprenticeship system that traditionally provided training and upward mobility for printing employees is not widely used anymore. Thus, new systems of training are needed that closely match the needs of local employers. As DES concluded, "since apprenticeships are now no longer widely used, there is no uniform system for acquiring training and pursuing advancement in some printing trades."

The DES report looked at the job categories in printing and determined the representation of women and minorities in these jobs. Women are well-represented in categories such as typesetting and in semi-skilled jobs. Minorities are under represented throughout the entire industry, even in the semi-skilled jobs. Any new training program should be focused towards getting minorities into the industry.

According to DES, the training requirements of printing firms, by occupational category, are as follows:

- **Typesetting.** Employers prefer to hiring people with training from a voc high school or post-secondary tech school.

♦ **Lithographers and photoengravers.** Employers prefer to hire workers with voc-ed or technical school training, OJT was also acceptable. Training available in tech schools, four year colleges and community colleges.

♦ **Press operators.** In newspaper offices and union offices, usually trained in apprentice programs. Commercial printers (usually non-union) use a less formal, but lengthy training process after hiring high school or vocational grads as "press helpers". It takes about 4 years of OJT to become an operator.

♦ **Binding and finishing workers.** The highly skilled jobs, such as binding repairs and reparations, need several years training. Semi-skilled positions such as machine tenders get OJT.

Linkage funds could be used in the following ways:

1) Outside training programs could be coordinated with on-site training at the firm, so students can learn on specialized equipment that programs and schools could not afford to purchase.

2) A program could be developed to educate high school students in the printing professions. Fenway and Mission Hill residents could get after-school jobs at the firms, especially any positions particularly hard to fill. Minority schools could be targeted, to make up for the low number of minorities in the printing professions.

5.7 Training in Low-Skill Jobs for Handicapped Workers

The Vocational Adjustment Center, currently located in the Fenway, serves persons with mental retardation, blindness, and physical handicaps. The program is designed to provide training for competitive employment, supported employment, and sheltered employment. The Center is operated by the Greater Boston Association for Retarded Citizens. A number of the Center's clients have the capacity to perform such entry level jobs as food service, maintenance, packaging, collating, and message delivery. The VAC and the developers of Olmsted Plaza should work cooperatively to create entry level employment opportunities within the development for VAC clients. If necessary, a small amount of linkage funds could be used to augment the VAC's training capacity.

5.8 Conclusion

Clearly, not all of the ideas included in this report are possible with the resources which will be created through the Olmsted Plaza development. They are presented as a set of options for further consideration and analysis. It is not possible to design the specific programs or possible curriculum without more extensive analysis and more importantly, greater participation by all of the possible actors involved. It is also hoped that those ideas not supported with the linkage funds can serve to set in motion activities of other actors involved in employment and training in the City of Boston.

APPENDIX V

MISCELLANEOUS

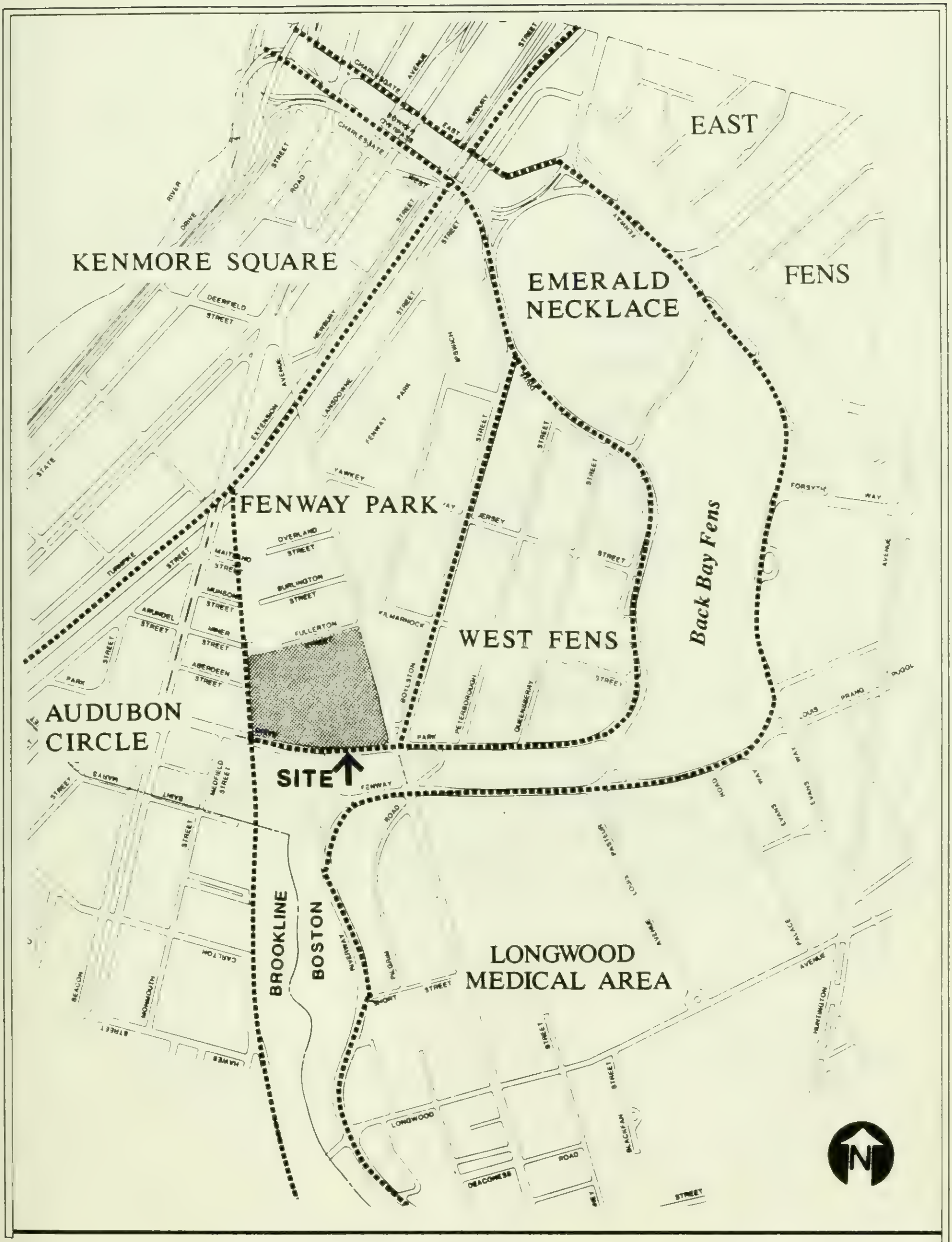

FIGURE 2.2-3
NEIGHBORHOOD MAP

MONTHLY VARIATION FOR MBTA

1983 - 1989

Month	% of Average Month
January	94
February	101.8
March	101
April	103
May	101
June	100
July	88
August	88
September	100
October	105
November	105
December	97

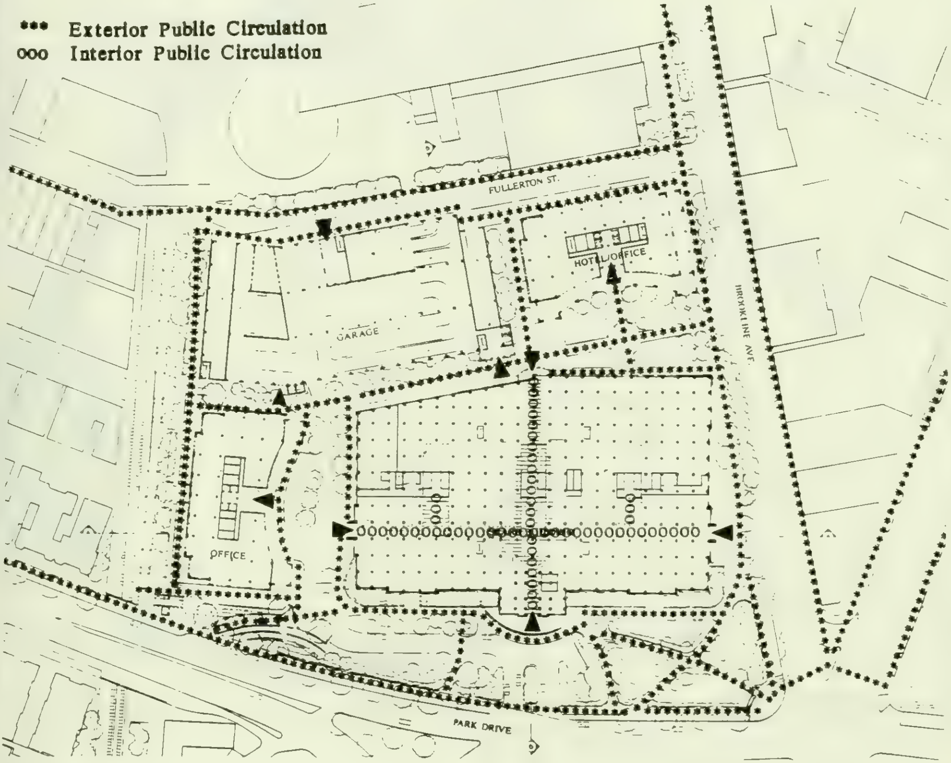
*** Exterior Public Circulation
ooo Interior Public Circulation
FULLERTON ST.
GARAGE
HOTEL/OFFICE
OFFICE
BROOKLINE AVE.
PARK DRIVE

FIGURE 5.5-4
PEDESTRIAN CIRCULATION AND ACCESS

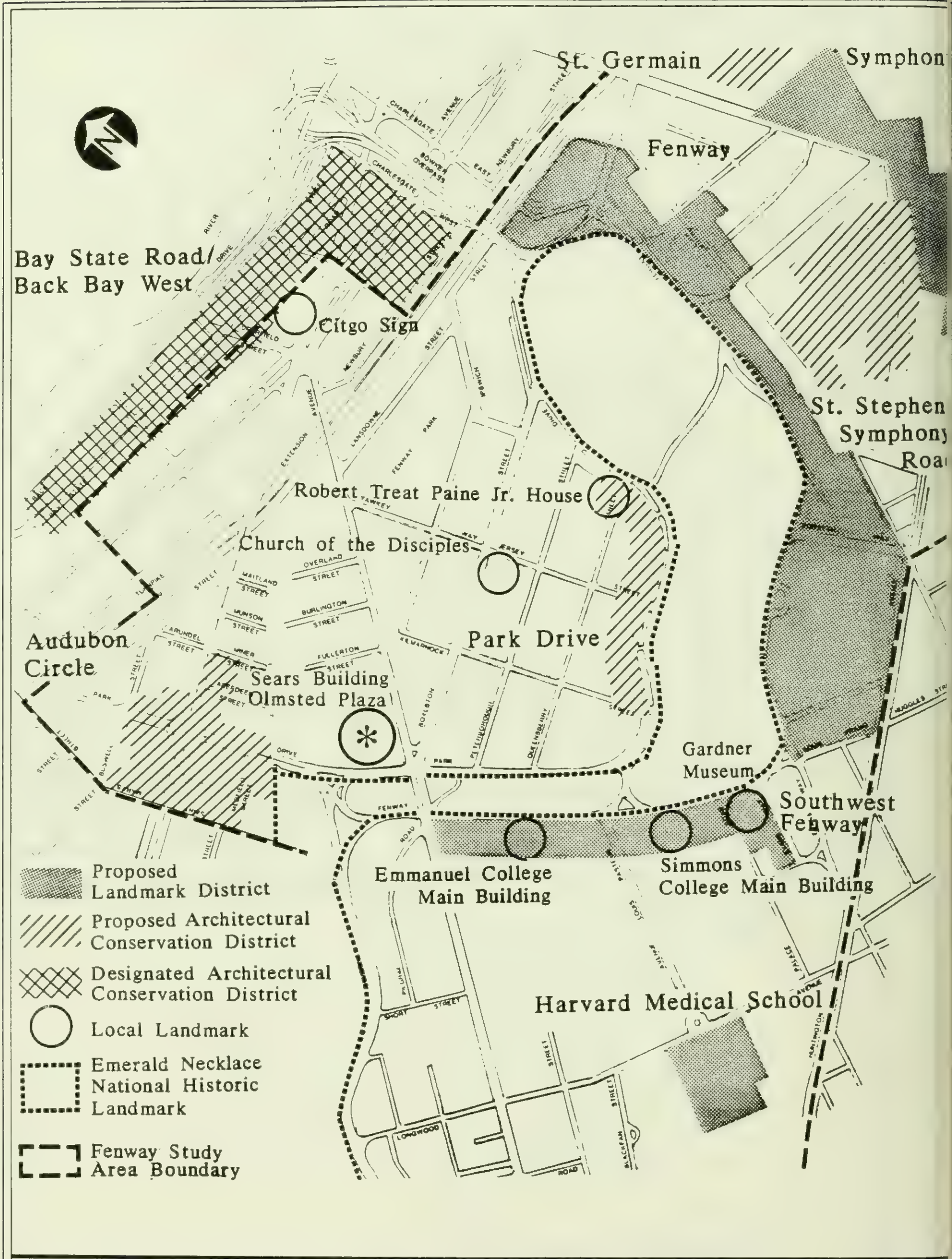

FIGURE 6.1-1
HISTORIC RESOURCES

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The Appendices for the Olmsted Plaza DPIR/DEIR are separately bound. Copies are available for technical reviewers at BRA (contact Donald Klabin, Project Manager, 727-4300), at MEPA (contact Connie Getek, MEPA Coordinator, 727-5830) and at the Boston Public Library Reference Section. Those with special needs for personal copies of individual Appendices should provide written requests to Sam Gifford at HMM Associates, 196 Baker Avenue Extension, Concord, MA 01742.

APPENDIX VI

COOPERATION AGREEMENT,
TRANSPORTATION ACCESS PLAN AGREEMENT
AND RELATED CORRESPONDENCE

12/13/89

COOPERATION AGREEMENT
FOR
PLANNED DEVELOPMENT AREA NO. 36
OLMSTED PLAZA

AGREEMENT made as of the _____ day of __________, 1989 by and between the BOSTON REDEVELOPMENT AUTHORITY, a body politic and corporate created pursuant to Chapter 652 of the Acts of 1960, as amended, acting in its capacity as the planning board for the City of Boston (the "Authority") and OLMSTED PLAZA ASSOCIATES, a Massachusetts general partnership consisting of JMB/Olmsted Limited Partnership, an Illinois general partnership with JMB Realty Corporation, a Massachusetts corporation, as its general partner, and Macomber Olmsted Plaza Associates Limited Partnership, a Massachusetts limited partnership with Macomber Development Associates, a Massachusetts corporation, as its general partner, its successors and assigns (the "Applicant").

WHEREAS, the Applicant wishes to undertake the development of a certain parcel of land in the City of Boston bounded by Park Drive, Brookline Avenue, Fullerton Street, and the Riverside or "D" branch of the MBTA Green Line (the "Site"), as more particularly described in Exhibit A attached hereto;

WHEREAS, the Applicant submitted to the Authority an Application Letter for designation as Planned Development Area Number 36 dated October 24, 1989 as supplemented November 9, 1989 requesting approval of a Development Plan and Development Impact Project Plan (the "Development Plan") for the Site;

WHEREAS, the Applicant proposes to construct on the Site a mixed-use development (the "Project"), including one or more of the uses set forth in the Development Plan in two or more phases, the Project to consist of (a) the rehabilitation of the existing Sears Building on the Site (the "Sears Building") and the construction of a multi-story parking garage (the "Garage") (collectively, "Phase 1") and (b) the construction of up to two additional multi-story buildings (the "Brookline Avenue Building" and the "Park Drive Building");

WHEREAS, the Development Plan was approved by the Authority on November 30, 1989 (the "Vote"), after a public hearing at its meeting held on November 16, 1989 continued to November 30, 1989, notice of which was published in The Boston Herald on November 10, 1989, a certified copy of which Vote is attached hereto as Exhibit B; and

WHEREAS, the Applicant and the Authority are entering into a Development Impact Project Agreement with respect to the Project of even date herewith.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the parties agree as follows:

1. The Authority will petition the Zoning Commission of the City of Boston on behalf of the Applicant to designate the Site as a Planned Development Area.

2. The Applicant will, subject to Paragraph 16 of this Agreement, proceed with the development in a manner consistent with the Development Plan, subject to the Environmental Reviews set forth in Paragraph 3 and the Development Review Process set forth in Paragraph 6. A copy of the Development Plan is attached hereto as Exhibit C.

3. The Applicant submitted to the Authority the Draft Project Impact Report/Draft Environmental Impact Report for the Site dated September, 1989 on September 29, 1989. The Applicant will be responsible for the submission to the Authority of a Final Project Impact Report for the Site (the "FPIR"). In connection with the development, the Applicant will conduct any additional environmental reviews reasonably requested by the Authority ("Environmental Reviews") in accordance with the Authority's "Development Review Procedures" dated 1985, revised 1986 which is attached hereto as Exhibit D and in accordance with Article 31 of City of Boston Zoning Code (the "Code") (collectively, the "Development Review Procedures"). The Authority may require the Applicant to take all practical measures, including, without limitation, all reasonable economical measures consistent with the scope of the proposed development of the Project as presently conceived to mitigate potential damage to the environment identified in the FPIR.

4. The Applicant shall submit a Traffic Maintenance Plan ("TMP") for the Project to the Commissioner of Transportation of

the City of Boston prior to issuance of a building permit for the construction of any portion of the Project. The TMP will identif construction, traffic, and parking impacts and specify mitigating measures to be implemented during the construction of the Project that are reasonably satisfactory to the Commissioner of Transportation.

5. The Applicant has submitted a Transportation Access Pla ("TAP") for the Project to the Commissioner of Transportation. The Applicant shall also enter into a Transportation Access Plan Agreement with the Commissioner of Transportation prior to issuance of a building permit for the construction of any portion of the Project. The TAP identifies traffic and parking impacts of the Project and specifies mitigating measures and Project goals. The TAP Agreement will identify mitigating measures and Project goals that are reasonably satisfactory to the Commissioner of Transportation. In order to assure that the transportation impacts of the Project are adequately managed, the City will require through its TAP Agreement that the Applicant monitor traffic generation and mode split annually from the date of occupancy through completion of the Project. The Applicant agrees to pay $550,000, including $50,000 for an area-wide transportation study, to the Boston Transportation Department to effect traffic mitigation measures in the Fenway area. Issuance of a building permit for the Brookline Avenue Building or the Park Drive Building shall be conditioned upon completion of those mitigation

measures specified in the TAP Agreement which are within the control of the Applicant and compliance with the terms of the TAP Agreement.

In order to ensure that traffic generated by the Project does not adversely affect the local or regional roadway systems or the residential Kenmore, Fenway, Audubon Circle or Mission Hill neighborhoods, the TAP Agreement shall require the Applicant to institute a comprehensive Commuter Mobility Program. The goals of the Commuter Mobility Program will be: to maximize the use of mass transit and ridesharing by persons visiting, residing at or working at the Project Site; to make available to all workers in the area, by means of cooperation with other business and institutions such as are represented by Medical Area Services Corporation ("MASCO") and its Longwood Medical Area Transportaion Management Association, improved access to mass transit and ridesharing services; to foster through cooperative efforts with local and state government improvements in transportation facilities, programs and services.

In order to achieve the Goals of the Commuter Mobility program, specific objectives (the "Objectives") will be established for the Project. The intended date for the fulfillment of the Objectives is the later of (a) five years after the issuance of the Certificate of Occupancy, or (b) the date on which an occupancy level of 50% of the net rentable area of the Sears Building is attained. The Objectives of the Commuter

Mobility Program shall be determined and set forth in the TAP Agreement:

The Developer shall submit annual monitoring reports detailing the transportation impacts of the Project. In order to evaluate the progress toward attainment of the Objectives, the Developer will include in each annual monitoring report an analysis showing the levels of transit usage and vehicle occupancy of commuters to the Project Site. The annual monitoring report will also include a comparison of the transit usage and vehicle occupancy levels with the Objectives and an assessment of progress toward the Objectives. If the Objectives have not been achieved by the intended dates set forth in the TAP Agreement, the annual monitoring report shall include a proposed plan for improving the Commuter Mobility Program. Annual monitoring reports shall be submitted for the review and approval of the BTD, which shall consult with the Developer with respect to the development of mutually agreeable improvements to the Commuter Mobility Program, as necessary to achieve the Objectives by use of reasonable and economical means consistent with commuter mobility programs for comparable projects.

Prior to obtaining a building permit for construction of each of the Brookline Avenue Building and the Park Drive Building, the Developer shall also complete an updated Traffic Impact and Access Plan (the "Updated Plan") in which progress towards the goals of the Commuter Mobility Program will be assessed, the effectiveness of the Commuter Mobility Program will be measured and reasonable adjustments to the Commuter Mobility Program will be proposed, as necessary. The scope of the Updated Plan will include an analysis of certain intersections analyzed in the Traffic Impact and Access Plan, such analysis to be limited to an analysis of the levels of service at ten intersections. The Updated Plan shall also include proposals for ways in which the contributions to be made by the Developer in connection with the Park Drive Building and the Brookline Avenue Building can reasonably be used to mitigate traffic impacts and to improve traffic conditions in the area of the Project ("Mitigation Measures"). The process for review of the Updated Plan shall be as follows:

(a) The Developer shall submit a draft of the Updated Plan to the BRA and to BTD. Within five (5) days after submission of the draft Updated Plan to the BRA, the BRA shall publish notice of such submission in one or more newspapers of general circulation in the City, such notice to state the name of the Developer and the street address of the Project, and shall make copies of the draft Updated Plan available to the public. Within thirty days of such notice, public comments, including comments of public agencies, shall be transmitted in writing to the BRA. During such thirty day period, the Developer shall present the Updated Plan to the community at a public forum to be held in the Fenway/Audubon Circle area.

(b) Based upon public comments and review by the BRA and the BTD of the draft Updated Plan, the BTD shall issue a written Adequacy Determination to the Developer within forty-five (45) days of the submission of the draft Updated Plan to the BRA. The Adequacy Determination shall indicate whether the Updated Plan satisfies the scope set forth herein and may also direct the Developer to consider further Mitigation Measures. If the BTD fails to issue a written Adequacy Determination within said forty-five (45) day period, the draft Updated Plan shall be deemed approved.

(c) After the issuance of the Adequacy Determination, the Developer shall satisfy the requirements set forth in the Adequacy Determination, if any, by preparing a final Updated Plan. Within five days of the Developer's submission of a final Updated Plan to the BRA and BTD, the BRA shall publish notice of such submission in one or more newspapers of general circulation in the City, such notice to state the name of the Developer and the street address of the Project, and shall make copies of the final Updated Plan available to the public. Within thirty days of such notice, public comments, including the comments of public agencies, shall be transmitted in writing to the BRA. During such thirty day period, the Developer shall present the Updated Plan to the community at a public forum to be held in the Fenway/Audubon Circle area.

(d) Based upon public comments and review by the BRA and BTD of the final Updated Plan, the BTD shall issue a written Final Adequacy Determination within forty-five (45) days of the submission of the final Updated Plan to the BRA. In issuing the Final Adequacy Determination, the BRA, in conjunction with BTD, shall approve the final Updated Plan or, if the Updated Plan fails to satisfy the requirements of the Adequacy Determination, disapprove the final Updated Plan, stating the specific respects in which it fails to fulfill the requirements of the Adequacy Determination. If the BTD fails to issue a written Final Adequacy Determination within said forty-five (45) day period, the final Updated plan shall be deemed approved. In the event that the BTD disapproves the final Updated Plan, the Developer and the BTD shall work together in order to arrive at a mutually acceptable Updated Plan within thirty (30) days thereafter. At the completion of this process, the Agreement will be amended as necesary to reflect the approved Updated Plan.

6. The Applicant and the Authority hereby agree that the development review process required by the Development Plan to be observed by the parties ("Development Review Process") shall be as set forth in the Development Review Procedures, including reviews of the Development Concept, Schematic Review, Design Development and Contract Documents. The Applicant and the Authority hereby further agree that, as mutually agreed upon by the parties, the Development Review Process may be undertaken separately for each

of the Components (as defined in Paragraph 21 hereof) to be constructed on the Site. Capitalized terms used and not defined herein shall have the meanings ascribed to them in the Development Review Procedures.

7. The Applicant has contracted with Notter Finegold + Alexander Inc (the "Architect") to provide design assistance and master planning for the Project.

8. The Authority hereby approves the Schematic Design for the Sears Building as set forth in the Schematic Design Submission for the Project dated September 15, 1989 prepared by the Architect, which was submitted by the Applicant to the Authority on October 16, 1989 (the "Schematic Design Submission). The Authority also approves the height and gross floor area and the general footprint, envelope and location proposed for the Garage, the Brookline Avenue Building and the Park Drive Building as set forth in the Olmsted Plaza Design Parameters for the Park Drive Building, the Brookline Avenue Building and the Garage dated November 30, 1989 (the "Design Parameters"), a copy of which is attached hereto as Exhibit E. The Authority agrees that it will not withhold approval of future design submissions by the Applicant because of the height, gross floor area, footprint, envelope and location proposed for the Brookline Avenue Building, the Park Drive Building and the Garage so long as the same are consistent with the Design Parameters.

9. Throughout the Development Review Process discussed in Paragraph 6 above and in connection with the development of each Component, including the multi-story garage to be constructed on certain land located on Van Ness Street, the Applicant will submit to the Authority the submissions required by the Development Review Process. It shall be the Applicant's responsibility to notify the Authority of proposed material changes to public lobbies visible from the exterior of buildings, open spaces and landscaping and exterior features of buildings from previously approved submissions (other than refinements of details generally consistent with such previously approved submissions), and to obtain approval from the Authority prior to incorporating them into the drawings and specifications. The Authority shall perform its functions under this provision promptly and with all reasonable dispatch and in accordance with the provisions of this Agreement, and shall approve or disapprove such a change (i) within seven (7) days of its submission to the Authority, and (ii) when the Authority disapproves such material change, its disapproval shall include a detailed written explanation therefor. If the Applicant receives no notification from the Authority of disapproval within seven (7) days after submission of said change, such change shall be deemed approved.

10. Once Contract Documents for the Project have been approved, the only further submissions to be made by the Applicant to the Authority for review and approval hereunder will be

contract addenda and requests for change orders (that is, change orders having a cost of construction greater than $100,000) ("Change Orders") in the construction of those items subject to the Development Review Process which differ from or were not fully described in the Contract Documents. The Authority shall perform its function under this provision promptly and with all reasonable dispatch, and shall approve or disapprove Change Orders (i) within seven (7) days of their submission to the authority, and (ii) when the Authority disapproves a Change Order, its disapproval shall include a detailed written explanation therefor. If the Applicant receives no notification from the Authority of such disapproval within seven (7) days after submission of said Change Order, such Change Order shall be deemed approved. Notwithstanding the foregoing, the Authority's approval shall not be required for change orders affecting changes which will not be visible from the exterior of the building, or from public lobbies in the building.

11. A separate Development Review Process shall be undertaken for each Component conforming to the process described in Paragraph 6 hereof. A violation of the Development Review Process with respect to a particular Component shall not be considered a violation of the Development Review Process with respect to any other Component which has been purchased or leased by the Applicant prior to the occurrence of said violation.

The Authority will informally advise the Applicant concerning, and will actively cooperate with and publicly support, the Applicant's efforts to obtain from the appropriate municipal, state and federal bodies and agencies all such permits, licenses and approvals, and exceptions, variances and other departures from the normal application of the applicable zoning and building codes and other ordinances and statutes, which may be necessary or convenient in order to carry out the development of the Site in accordance with the Development Plan, to fulfill the Applicant's obligations hereunder in the most expeditious and reasonable manner, and to develop a multi-story parking garage containing approximately 440-500 parking spaces on certain land located on Van Ness Street and bounded by Van Ness Street, Yawkey Way, a passageway and land owned by Harvard Community Health Plan.

12. The Applicant anticipates commencing demolition of the warehouse additions to the existing Sears Building in the first quarter of 1990, with renovation of the Sears building planned for substantial completion by the end of 1991. Excavation for the Garage is scheduled to occur during the summer of 1990. It is estimated that the Brookline Avenue Building and the Park Drive Building will be constructed during the period from 1992 to 1996. After construction has commenced on the Site, and provided that work within the PDA has commenced and is diligently proceeding, the Authority will, within 30 days of a request by the Applicant, file with the Building Commissioner of the City of Boston a certificate pursuant to Section 6A-1 of the Code indicating that work within the PDA has commenced and is diligently proceeding.

13. The Applicant will execute a Boston Residents Construction Employment Plan, consistent with the requirements of the Boston Residents Jobs Policy established by Chapter 30 of the Ordinances of 1983 and the Mayor's Executive Order Extending the Boston Residents Jobs Policy dated July 12, 1985 and which sets forth in detail the Applicant's plan to ensure that its general contractor, and those engaged by said general contractor for construction of the Project on a craft by craft basis, use good faith efforts to meet the following Boston Residents Construction Employment Standards: (1) at least 50% of the total employee worker hours in each trade shall be by bona fide Boston residents; (2) at least 25% of the total employee worker hours in each trade shall be by minorities; and (3) at least 10% of the total employee worker hours in each trade shall be by women. Said plan shall include provisions for monitoring, compliance and sanctions. Worker hours, as defined in said plan, shall include on-the-job training and apprenticeship positions.

14. The Applicant shall execute a Memorandum of Understanding and a First Source Agreement in connection with the Project. The Memorandum of Understanding shall set forth an Employment Opportunity Plan which presents the Applicant's good faith effort to provide that fifty (50%) percent of certain employment opportunities created by the Project will be made available to Boston Residents. The First Source Agreement with the Mayor's Office of Jobs and Community Services shall provide

for the Applicant to use the services of the Private Industry Council sponsored "Boston for Boston" placement office employment referrals before embarking on a general recruitment effort to fill entry-level positions within the Project. Subject to approval by the Mayor's Office of Jobs and Community Services, the Applicant agrees to work with residents of the Fenway and Mission Hill neighborhoods in order to set the highest reasonable goal for the percentage of permanent employees who will be residents of the Fenway and Mission Hill neighborhoods.

15. Any building(s) contemplated by the Development Plan for the Project shall be deemed completed when the Applicant has substantially completed construction of the exterior of the building, the public lobbies, entrances, and open spaces, all in substantial accordance with approved Construction Documents and the same are substantially ready for occupancy, except for (i) items of work and adjustment of equipment and fixtures which can be completed after occupancy has occurred, e.g. so-called punchlist items, (ii) landscaping and other similar work which cannot then be completed because of climatic conditions or other reasons beyond the reasonable control of the Applicant and (iii) with respect to office, retail, research and development and other tenant space, items of work normally left for completion pursuant to the requirements of specific occupancy agreements and interior work to be performed to tenants' specifications. Upon completion of any building, the Authority shall issue to the Applicant a

Building Certificate of Completion, which shall be in recordable form and shall be conclusive evidence that said building has been completed in accordance with the Development Plan and this Agreement. Upon the completion of all buildings in accordance with the foregoing and the other improvements comprising a Component of the Project, the Authority shall issue to the Applicant a Component Certificate of Completion in recordable form, which shall be conclusive evidence that the Component has been completed in accordance with the Development Plan and this Agreement.

Upon the completion of all buildings in accordance with the foregoing and the other improvements comprising Applicant's Development Plan, the Authority shall issue to the Applicant a Project Certificate of Completion in recordable form, which shall be conclusive evidence that the Project has been completed in accordance with the Development Plan, all obligations to the Authority thereunder and under this Cooperation Agreement having been fulfilled (except any obligation hereunder which by its terms survives the completion of construction of the Project, which obligation when cited in the Project Certificate of Completion shall survive the issuance of the Project Certificate of Completion).

The Authority shall issue a Building, Component or Project Certificate of Completion to Applicant and to any mortgagee of the Project or the applicable portion thereof within thirty (30) days after Applicant's request therefor. Such Certificate of Completion shall be in suitable form for recording in the Registry of Deeds for Suffolk County, Commonwealth of Massachusetts. If the Authority shall refuse or fail to issue any such Certificate in accordance with the provisions of this Paragraph 15, the Authority shall, within said thirty (30) days after Applicant's request, provide the Applicant with a written statement, indicating with specificity in what respect the Applicant has failed to complete the building or other improvements in accordance with the approved Development Plan or is otherwise in default of its obligations to the Authority and what measures or actions will be necessary, in the opinion of the Authority, for the Applicant to take or perform in order to obtain such Certificate of Completion; upon compliance by the Applicant with the requirements of such statement, the Authority shall issue such Certificate of Completion. If the Authority shall refuse or fail to provide such a written statement to the Applicant or any such mortgagee within thirty (30) days of a request therefor, then the instrument certifying substantial completion of the particular building, Component or the Project, as the case may be, shall be deemed to have been issued. The Applicant and any such mortgagee may record an affidavit with said Deeds, which affidavit shall attest to the adequacy of notice to the Authority, the elapsed response, and the substantial completion of construction of the particular building or Component or completion of the Project, as the case may be, in accordance with the provisions of this Agreement. Such affidavit shall be conclusive evidence as to the facts stated therein and as to the substantial construction of the particular building or Component or completion of the Project, as the case may be, in accordance with the Development Plan and this Agreement.

16. The Applicant shall cause title to the property currently owned by Sears and bounded by Park Drive, The Fenway, Brookline Avenue and By Pass Road (the "Emerald Necklace Parcel"), to be conveyed by Sears, Roebuck and Company ("Sears") directly to the City of Boston by no later than thirty days after the Park Completion Date (as defined hereinafter). The Authority agrees that either (i) the City of Boston will accept the conveyance of the Emerald Necklace Parcel, or (ii) the Authority will designate, prior to the date of acquisition of the Site by the Applicant and subject to the reasonable approval of the Applicant, a nonprofit organization, or an entity under the control of or established by the City or the Authority, which will accept the conveyance of the Emerald Necklace parcel, in which case the Applicant shall cause the Emerald Necklace parcel to be conveyed directly to such party. Subject to obtaining required zoning relief and other permits, the Authority agrees that the Emerald Necklace Parcel will thereafter be operated as a parking lot by an independent parking lot operator for a period of no more than two years, with the net income generated thereby, together with all interest earned

thereon, to be devoted to construction of a public park estimated to cost $1,000,000 (the "Park") on the Emerald Necklace Parcel in a manner to be approved by the Authority and the Applicant. The Authority shall cause the City to appoint an Advisory Committee to oversee planning for and design of development of the Park, such Advisory Committee to consist of representatives of the City, the Authority, the Developer, abutters to the Emerald Necklace Parcel, the Fenway community and open space advocacy groups.

Subject to obtaining necessary permits and approvals, the Applicant agrees to construct, or cause the construction of the Park. The Applicant will contribute the following amounts for development of the Park: (a) $100,000 to be used solely to facilitate planning for and design of the Park and to be payable on or before January 31, 1990; (b) $300,000 to be used solely for construction of the Park and to be payable on a dollar for dollar matching fund basis as funds from other sources are contributed to the Authority, or to such other party designated by the Authority, to be used solely for construction of the Park. Notwithstanding the foregoing, Applicant shall complete construction of the Park or cause construction of the Park to be completed no later than July 1, 1992, subject to extensions for delays caused by circumstances beyond the reasonable control of the Applicant, provided that the approval of the Authority is obtained, such approval not to be unreasonably withheld or delayed (as so extended, the "Park Completion Date"). No building permit shall be issued for any portion of the Project after the Park Completion Date until the Applicant's fulfillment of its obligation to construct the Park. However, in the event that the cost of construction of the Park exceeds $1,000,000, the Applicant agrees to work with other sources and undertake good faith efforts to procure the additional sums required to complete the Park, but shall not be required to complete construction of any portion of the Park costing in excess of $1,000,000 unless such additional sums required are procured.

Standard maintenance of the Park will be provided by the City of Boston Parks and Recreation Department. The Applicant agrees to provide additional maintenance services for the Park for a period commencing thirty days after notice from the Authority to the Applicant that construction of the Park is substantially complete and terminating on the earlier of fifty years thereafter or July 1, 2042. Maintenance services shall include and shall be limited to the following:

(a) Sweep paths and under benches daily, wash hard surfaces with hose twice monthly.

(b) Remove litter throughout the Park a minimum of once daily, or as needed to be completely litter free.

(c) Provide appropriate professional horticultural attention to special plantings of perennials and/or deciduous shrubs. Such attention may include but is not limited to: bed cultivation, plant feeding, weeding, watering as needed, thinning, and mulching.

(d) Turf irrigation by field hydrant as needed.

(e) Trees shall be pruned and fed on an annual basis under the supervision of a certified arborist until they have grown to sufficient size to warrant a longer pruning/ feeding cycle as determined by the City of Boston Parks and Recreation Department.

(f) Park furniture shall be repainted, cleaned, or refurbished on an annual basis, as needed.

(g) Water fountain, if any, shall be kept in good working order from April 30 to October 31.

(h) Irrigation system, anticipated to be a field hydrant, shall have water turned off for winter.

17. The Applicant has commissioned a report from a labor market economist to assess the needs of the unemployed and underemployed residents of the Fenway area. The economist is working with area institutions and medical facilities in the Longwood Medical area to identify occupations experiencing labor shortages. The report will conclude with a series of recommendations as to how those in need of work, through skills training and improved referral mechanisms, can improve their chances of obtaining jobs. The Applicant will work with the Mayor's Office of Jobs and Community Services to make employment and training opportunities available to both Fenway employers and

residents. The primary focus of this program will be on jobs available in the biomedical research field and on specific job categories presently unfilled in the educational and medical institutions located in the Fenway area. The Applicant will set aside in the Project no less than 2,000 square feet of indoor space, at a below market rental rate, for a job training, counseling and referral center to support training programs for the medical and biomedical research industries (the "Job Center") Through the Neighborhood Jobs Trust, it is intended that the Jobs Contribution Grant, as such term is defined in Section 26-2(3) of Article 26B of the Boston Zoning Code, subject to required approvals, shall be used to create a job training program which will include, but not be limited to (a) a child care management program; (b) a health care/research jobs program; and (c) a scholarship program intended to provide job training opportunitie at accredited offsite training centers sponsored by local institutions to residents of the Mission Hill and Fenway neighborhoods. Applicant shall identify a mechanism to inform residents of the Mission Hill and Fenway neighborhoods of job training opportunities available as a result of the Project. The Applicant will also set aside in the Project no less than 8,000 square feet of indoor space, on a rent-free basis, for a child daycare center for at least one hundred (100) children to serve the needs of working parents employed at the Project (the "Child Care Center"). The Applicant will work with the Authority on a

Child Care Provision Agreement to be agreed upon and executed by the Applicant and the Boston Women's Commission, which plan shall set forth the proposed child daycare program and program design, the responsibilities for expenses associated with such center, the proposed child daycare population to be served by the Child Care Center and the proposed delivery date of such Child Care Center. The Applicant will secure the initial operators of the Job Center and the Child Care Center and will make available or cause to be made available the initial facilities to include the fixtures, furnishings and equipment required for the operation of the Job Center and the Child Care Center. Children of working parents from the Fenway area will be given priority placement in the Child Care Center. During the period prior to initial occupancy by tenants of the Project, the Applicant shall begin to solicit proposals in order to select a provider of child daycare services to the Project (the "Provider"). All such proposals and the Applicant's recommendations with respect to such proposals shall be made available to the community. The Applicant shall consider the comments and concerns of the community with respect to such proposals, but shall have the right to select the Provider. The quality of child daycare services to be provided shall be the Applicant's first priority in selecting the Provider. The Applicant also agrees to make efforts to choose a Provider who will (a) maximize the affordability of child daycare services; (b) establish after school programs for children of parents employed at the Project; (c) cooperate with Wheelock College to provide fo a training and employment program for child daycare providers, if such program is established by the Applicant and Wheelock College the establishment of such program to be subject to an agreement being reached by the Applicant and Wheelock College, required approvals being obtained for such program, and a portion of the Jobs Contribution Grant contributed by the Applicant pursuant to Article 26B of the Code being made available for such program; an (d) provide a program for family daycare coordination to assist the neighborhoods in the initial process of licensing child care facilities, to train providers of home care services, to provide space for activities for children, to coordinate a lending librar of toys and to coordinate centralized billing. After occupancy b tenants of an area in excess of 25% of the gross floor area of Phase 1, no certificate of occupancy for additional tenant space shall be issued until the Applicant has satisfied its obligations set forth herein relating to the Child Care Center. The Applicant shall, two years after the completion of Phase 1, perform a surve of employees of the Project in order to determine the residency of such employees and shall make the results of such survey available to the community.

18. The Applicant agrees that it shall comply, and all tenants of space in the Project shall be required to comply, with all federal, state and local statutes, and any regulations promulgated thereunder, relating to the generation, processing and

disposal of medical wastes, hazardous substances and hazardous wastes and to the operation and maintenance of health care facilities and medical laboratories.

The Applicant agrees that the building management staff of the Project shall include an individual who is familiar with the tenant activity within the Project and with the applicable statutes and regulations relating to medical wastes, hazardous substances and hazardous wastes and the operation and maintenance of health care facilities and medical laboratories. Such individual shall be prepared to coordinate a response to any emergency which might occur at the Project involving medical wastes, hazardous substances or hazardous wastes. The Applicant agrees to use reasonable efforts to cause information relating to tenant activities involving any of such substances to be available to the public, except to the extent any such information may be proprietary or a trade secret.

The Applicant shall include in all leases for laboratory space at the Project a requirement that all experiments involving the use of animals conducted at Olmsted Plaza shall be conducted in conformity with legal requirements of the current Guide for the Care and Use of Animals of the National Institute of Health and succeeding and revised editions thereof, the Animal Welfare Act (7 U.S.C. Section 2131 et seq.) and the federal regulations pursuant to said Act, the Public Health Service Policy on Humane Care and Use of Laboratory Animals, all as amended from time to time, statutes and regulations of the Commonwealth of Massachusetts, and ordinances, executive orders and regulations o the City of Boston.

19. If, in the future, the Applicant shall, in its reasonable judgment, determine that it has become infeasible to proceed with the whole or portion of the approved Development Plan, then in such case and after substantiation by the Applicant deemed reasonably adequate by the Authority of the reasons for not being able to proceed, the Authority shall cooperate with the Applicant to modify, alter, or amend its previous approval of the Development Plan and this Agreement in order to allow the Applicant the opportunity to reasonably develop the land that it owns. If the parties acting in good faith cannot agree as to an appropriate modification, alteration, or amendment to the Development Plan, then the Authority agrees upon the Applicant's request to (i) revoke the PDA Designation for the Site if no portion of the Site has been developed in accordance with the Development Plan or (ii) release from the Development Plan those portions of the Site not developed in accordance with the Development Plan if a portion (but not all) of the Site has been developed in accordance with the Development Plan. Upon revocation of the PDA Designation for the Site, all obligations of the parties hereto shall terminate and be of no further force and effect. If the parties acting in good faith cannot agree as to an appropriate alteration, modification or amendment to the

Development Plan and if the Applicant so requests, the Authority agrees that the Applicant shall have no further obligation to proceed with such whole or portion, as the case may be, of the Development Plan.

20. The Authority acknowledges that, prior to approving the Development Plan and pursuant to Sections 3-1A.a and 26A-3.1 of the Code, the Authority found that the Development Plan conforms to the general plan for the City as a whole and that nothing in the Development Plan will be injurious to the neighborhood or otherwise detrimental to the public welfare.

21. This Agreement shall be binding upon and enforceable against the successors and assigns of the parties hereto (other than mortgagees of the Project or those claiming through mortgagees of the Project, unless said party obtains title to the Project and proceeds with development of the Project), it being understood and agreed that the Applicant shall have a right to transfer or assign to another party or parties its rights and interests under this Agreement and in all or a portion of the Site.

22. Each and every covenant contained in this Agreement is and shall be construed to be a separate and independent covenant applicable to each Component (as defined below) of the Project (with the exception of the provisions of Paragraphs 16 and 17 hereof which shall be and remain the obligation of the Applicant or its designated successor or assign and shall not apply

independently to each Component), and shall, as relevant, apply separately to each Component, and a default with respect to a particular Component under any section or provision of this Agreement shall not constitute a default with respect to any othe Component. For purposes of this Agreement, "Component" shall mea (i) any portion of the Project which is located on an individual lot, or (ii) any portion of such portion located on an individual lot which is independently financed.

23. If any term or provision of this Agreement, or the application thereof to any person or circumstance, shall to any extent be invalid and unenforceable, the remainder of this Agreement, or the application of such terms to persons or circumstances other than those to which it is invalid or unenforceable, shall not be affected thereby, and each term and provision of this Agreement shall be valid and shall be enforced to the extent permitted by law.

24. The liability of the Applicant or its successors or assigns (including, without limitation, mortgagees) arising under this Agreement with respect to each Component (the "Component Developer") shall be limited solely to the assets and property of the Component Developer with respect to such Phase, and no partner, trustee, beneficiary, shareholder, officer, director or the like of the Component Developer, from time to time, or any such person's or entity's separate assets or property shall have

or be subject to any personal liability with respect to any obligation or liability of the Component Developer hereunder.

25. Whenever the consent or approval of the Authority is required hereunder, under the Development Review Procedures, or otherwise, such consent or approval shall not be unreasonably withheld or delayed, or wherever there is a requirement that any thing, act or circumstance shall be satisfactory to the Authority or shall be done and performed to the Authority's satisfaction or any other requirement of similar import, the Authority covenants not to be unreasonable with respect thereto.

26. The Authority shall, within ten days after written request therefor by the Applicant or any mortgagee of the Project or any portion thereof, provide a certificate in writing, as requested or applicable, that the Agreement or any particular Paragraph hereof specified by the requesting party is in full force and effect and unmodified, or in what respects the Agreement is no longer in force or effect or has been modified, that the Applicant is in compliance with the Agreement or any particular Paragraph hereof specified by the requesting party, or in what respects there is non-compliance, or as to any other matter reasonably related to the Project which the requesting party may reasonably request of the Authority.

27. The Authority hereby authorizes the Director of the Authority to take any action hereunder on behalf of the Authority (including without limitation the granting of consents or

approvals and the execution and delivery of certificates), and an
action so taken shall be binding upon the Authority.

28. All notices or other communications required or permitted to be given under this Agreement shall be in writing, signed by a duly authorized officer or representative of the Authority or the Applicant, as the case may be, and shall be either hand delivered or mailed postage pre-paid, by registered o certified mail, return receipt requested and shall be deemed give when delivered, if by hand, or when deposited with the U.S. Posta Service, if mailed to the principal office of the party to which it is directed, which is as follows unless otherwise designated b written notice to the other party;

Applicant:
Olmsted Plaza Associates
c/o JMB/Urban Development Company
Four Copley Place
Suite 600
Boston, Massachusetts 02116
ATTN: Mr. Patrick Lee

with a copy to:
Hale and Dorr
60 State Street
Boston, MA 02109
ATTN: Vincent P. McCarthy, P.C.

Authority:
Boston Redevelopment Authority
1 City Hall Square
Boston, MA 02201
ATTN: Director

with a copy to:
Boston Redevelopment Authority
1 City Hall Square
Boston, MA 02201
ATTN: Chief General Counsel

The party sending any notices or other communication required or permitted to be given hereunder shall give a copy of all such notices or communications in the same manner as provided above to:

KAFNI
c/o Fenway Community Development Corp.
Post Office Box 127
Astor Station, Boston 02123

IN WITNESS WHEREOF the parties hereto have caused this instrument to be executed in their behalf by their respective officers and joint venturers thereunto duly authorized as of the day and year first above set forth.

Approved as to Form: BOSTON REDEVELOPMENT AUTHORITY

Robert E. McNeil By: ______________________

OLMSTED PLAZA ASSOCIATES,
a Massachusetts general partnership

By: JMB/Olmsted Limited Partnership, its general partner

By: JMB/Olmsted, Inc.

By: ______________________ Exe. V.P.
Its:

By: Macomber Olmsted Plaza Associates Limited Partnership

By: MOPA, Inc.

By: ______________________
Its: PRESIDENT

TRANSPORTATION ACCESS PLAN AGREEMENT
BETWEEN
THE CITY OF BOSTON TRANSPORTATION DEPARTMENT
AND
OLMSTED PLAZA ASSOCIATES

This Agreement is entered into this ______ day of _________, 1989, by and between the CITY OF BOSTON TRANSPORTATION DEPARTMENT (hereinafter referred to as "BTD") and OLMSTED PLAZA ASSOCIATES, a Massachusetts general partnership, the partners of which are JMB/ Olmsted Limited Partnership, an Illinois limited partnership, and Macomber Olmsted Plaza Associates Limited Partnership, a Massachusetts limited partnership, with its principal place of business c/o JMB Urban, Four Copley Place, Suite 600, Boston, Massachusetts 02116 (hereinafter referred to as "Developer").

WITNESSETH THAT:

WHEREAS, Developer proposes to construct OLMSTED PLAZA, a mixed use development including the renovated Sears building (the "Sears Building"), a multi-story building located on Park Drive (the "Park Drive Building"), a multi-story building located on Brookline Avenue (the "Brookline Avenue Building") and a multi-story parking garage (the "Garage"); and

WHEREAS, a Traffic Impact and Access Plan dated September, 1989 has been submitted on behalf of the Developer as part of the Combined Draft Project Impact Report and Draft Environmental

Impact Report which documents traffic and parking impacts of the Project (hereinafter defined), which Traffic Impact and Access Plan is incorporated herein by reference; and

WHEREAS, Developer acknowledges potential traffic and parking impacts from the construction and operation of the Project and that such impacts can be mitigated through a construction management plan and a permanent access plan; and

WHEREAS, the BTD and the Developer desire to mitigate traffic and parking impacts from the construction and operation of the Project;

NOW, THEREFORE, in consideration of the mutual promises herein contained, the sufficiency of which is hereby acknowledged, the parties do hereto mutually agree as follows:

Section 1. Definitions

(a) "Agreement" shall mean this Transportation Access Plan Agreement.

(b) "BRA" shall mean the Boston Redevelopment Authority, a body politic and corporate, organized under Massachusetts General laws, Chapter 121B, with offices at One City Hall Plaza, Boston, Massachusetts 02201, its successors and assigns.

(c) "BTD" shall mean the Transportation Department of the City of Boston with offices at One City Hall Plaza, Rm. 721, Boston, Massachusetts 02201, its successors and assigns.

(d) "Certificate of Occupancy" shall mean a certificate of occupancy issued by the City of Boston Inspectional Services Department for the shell and core areas of the Sears Building.

(e) "Phase 1" shall mean that portion of the Project (hereinafter defined) including the renovation of the existing Sears Building and construction of the Garage.

(f) "Project" shall mean that redevelopment project consisting of the renovation of the Sears Building and the construction of the Park Drive Building, the Brookline Avenue Building and the Garage.

(g) "Project Site" shall mean the parcel of land bounded by Park Drive, Brookline Avenue, Fullerton Street and an MBTA Right-of-Way as more fully set forth in Exhibit A to this Agreement.

(h) "Developer" shall mean Olmsted Plaza Associates, its successors and assigns.

(i) "Effective Date" shall mean the date of issuance of the Certificate of Occupancy.

(j) "Peak Hours" shall mean the hours between 7:00 and 9:00 A.M. and between 4:00 and 6:00 P.M., Monday through Friday.

(k) "Term of this Agreement" shall mean the period of time from the Effective Date hereof to thirty (30) years from the date of issuance of the Certificate of Occupancy.

(l) "Traffic Impact and Access Plan" shall mean the Transportation Impact Study and Access Plan for the Project dated September, 1989 as part of the Combined Draft Project Impact Report and Draft Environmental Impact Report prepared for the Developer by HMM Associates, as such Plan may from time to time be amended, a copy of which is incorporated herein by reference.

(m) "Van Ness Site" shall mean the parcel of land bounded by Van Ness Street, Yawkey Way, a passageway and land owned by Harvard Community Health Plan as more fully set forth in Exhibit B to this Agreement.

Section 2. Measures to Minimize Traffic Generation

In order to ensure that traffic generated by the Project does not adversely affect the local or regional roadway systems or the residential Kenmore, Fenway, Audubon Circle or Mission Hill neighborhoods, the Developer will institute a comprehensive Commuter Mobility Program. The goals of the Commuter Mobility Program will be: to maximize the use of mass transit and ridesharing by persons visiting, residing at or working at the Project Site; to make available to all workers in the area, by means of cooperation with other business and institutions such as are represented by the Medical Area Services Corporation ("MASCO") and its Longwood Medical Area Transportation Management Association, improved access to mass transit and ridesharing services; to foster through cooperative efforts with local and state government improvements in transportation facilities, programs and services.

In order to achieve the Goals of the Commuter Mobility program, specific objectives (the "Objectives") will be established for the Project. The intended date for the fulfillment of the Objectives is the later of (a) five years after the issuance of the Certificate of Occupancy, or (b) the date on which an occupancy level of 50% of the net rentable area of the Sears Building is attained. The Objectives of the Commuter Mobility Program shall be as follows:

(i) Transit Usage: among persons commuting to work at the Project site during the A.M. and P.M. peak hours, 48% shall use transit.

(ii) Vehicle Occupancy: among persons commuting to work at the Project Site during the A.M. and P.M. peak hours, the average number of persons occupying each privately owned vehicle will be 1.8.

To assist the Developer in attaining the Objectives, interim objectives (the "Interim Objectives") will be established, for which the date of intended attainment is three years after the issuance of the Certificate of Occupancy. The Interim Objectives shall be as follows:

(i) Transit Usage: among persons commuting to work at the Project site during the A.M. and P.M. peak hours, 46% will use transit.

(ii) Vehicle Occupancy: among persons commuting to work at the Project Site during the A.M. and P.M. peak hours, the average number of persons occupying each privately owned vehicle will be 1.7.

As described in Section 10 hereof, the Developer shall submit annual monitoring reports detailing the transportation impacts of the Project. In order to evaluate the progress toward attainment of the Objectives, the Developer will include in each annual monitoring report an analysis showing the levels of transit usage and vehicle occupancy of commuters to the Project Site. The annual monitoring report will also include a comparison of the transit usage and vehicle occupancy levels with the Objectives and an assessment of progress toward the Objectives. If the Objectives or the Interim Objectives have not been achieved by the intended dates set forth above, the annual monitoring report shall include a proposed plan for improving the Commuter Mobility Program. Annual monitoring reports shall be submitted for the review and approval of the BTD, which shall consult with the Developer with respect to the development of mutually agreeable improvements to the Commuter Mobility Program, as necessary to achieve the Objectives by use of reasonable and economical means consistent with commuter mobility programs for comparable projects.

Prior to obtaining a building permit for construction of each of the Brookline Avenue Building and the Park Drive Building, the Developer shall also complete an updated Traffic Impact and Access Plan (the "Updated Plan") in which progress towards the goals of the Commuter Mobility Program will be assessed, the effectiveness of the Commuter Mobility Program will be measured and reasonable adjustments to the Commuter Mobility Program will be proposed, as necessary. The scope of the Updated Plan will include an analysis of certain intersections analyzed in the Traffic Impact and Access Plan, such analysis to be limited to an analysis of the levels of service at ten intersections. The Updated Plan shall also include proposals for ways in which the contributions to be made by the Developer in connection with the Park Drive Building and the Brookline Avenue Building can reasonably be used to mitigate traffic impacts and to improve traffic conditions in the area of the Project ("Mitigation Measures"). The process for review of the Updated Plan shall be as follows:

(a) The Developer shall submit a draft of the Updated Plan to the BRA and to BTD. Within five (5) days after submission of the draft Updated Plan to the BRA, the BRA shall publish notice of such submission in one or more newspapers of general circulation in the City, such notice to state the name of the Developer and the street address of the Project, and shall make copies of the draft Updated Plan available to the public. Within thirty days of such notice, public comments, including comments of public agencies, shall be transmitted in writing to the BRA. During such thirty day period, the Developer shall present the Updated Plan to the community at a public forum to be held in the Fenway/Audubon Circle area after notice of the time and place of such public forum at least ten (10) days before the public forum published in one or more newspapers of general circulation in the City and given in accordance with Section 20 hereof.

(b) Based upon public comments and review by the BRA and the BTD of the draft Updated Plan, the BTD shall issue a written Adequacy Determination to the Developer within forty-five (45) days of the submission of the draft Updated Plan to the BTD. The Adequacy Determination shall indicate whether the Updated Plan satisfies the scope set forth herein and may also direct the Developer to consider further Mitigation Measures. If the BTD fails to issue a written Adequacy Determination within said forty-five (45) day period, the draft Updated Plan shall be deemed approved.

(c) After the issuance of the Adequacy Determination, the Developer shall satisfy the requirements set forth in the Adequacy Determination, if any, by preparing a final Updated Plan. Within five days of the Developer's submission of a final Updated Plan to the BRA and BTD, the BRA shall publish notice of such submission in one or more newspapers of general circulation in the City, such notice to state the name of the Developer and the street address of the Project, and shall make copies of the final Updated Plan available to the public. Within thirty days of such notice, public comments, including the comments of public agencies, shall be transmitted in writing to the BRA. During such thirty day period, the Developer shall present the Updated Plan to the community at a public forum to be held in the Fenway/Audubon Circle area after notice of the time and place of such public forum at least ten (10) days before the public forum published in one or more newspapers of general circulation in the City and given in accordance with Section 20 hereof.

(d) Based upon public comments and review by the BRA and BTD of the final Updated Plan, the BTD shall issue a written Final Adequacy Determination within forty-five (45) days of the submission of the final Updated Plan to the BTD. In issuing the

Final Adequacy Determination, the BRA, in conjunction with BTD, shall approve the final Updated Plan or, if the Updated Plan fails to satisfy the requirements of the Adequacy Determination, disapprove the final Updated Plan, stating the specific respects in which it fails to fulfill the requirements of the Adequacy Determination. If the BTD fails to issue a written Final Adequacy Determination within said forty-five (45) day period, the final Updated plan shall be deemed approved. In the event that the BTD disapproves the final Updated Plan, the Developer and the BTD shall work together in order to arrive at a mutually acceptable Updated Plan within thirty (30) days thereafter. At the completion of this process, the Agreement will be amended as necessary to reflect the approved Updated Plan.

Section 3. Capital Improvements

Prior to obtaining a building permit for the construction of the Sears Building, the Developer shall contribute the sum of $550,000, including $50,000 for an areawide transportation study, to the City of Boston, acting through the BTD, for traffic improvements, as outlined in Exhibit C attached hereto, relating to the impacts of the Project in the area surrounding the Project. The BTD will make good faith efforts to complete or to arrange for the completion of any improvements funded in whole or in part by this contribution before initial occupancy of the Sears Building.

Prior to obtaining a building permit for each of the Park Drive Building and the Brookline Avenue Building, the Developer will make a further contribution to the City of Boston, acting through the BTD, of 50¢ per square foot of gross floor area of the building for which the building permit is obtained, for the purpose of traffic improvements related to the Project, provided that the total contribution on account of the Park Drive Building and the Brookline Avenue Building shall not exceed $300,000.

Section 4. Transportation Coordinator.

(a) Transportation Coordinator. The Developer shall designate a Transportation Coordinator who shall cooperate with the BTD in the execution and monitoring of the obligations set forth in this Agreement. The Transportation Coordinator shall further establish and implement a Commuter Mobility Program at the Project Site, and as part of the Commuter Mobility Program shall provide the following services:

(1) coordinate all ridesharing activities as described in subsection 4(b) below;

(2) promote transportation options through periodic newsletters, special events, publicity, and tenant relations;

(3) manage on-site MBTA pass sales;

(4) encourage tenants to implement alternative work schedules to spread peak-hour travel;

(5) manage all parking issues;

(6) monitor efforts of the Commuter Mobility Program and submit annual reports to the BTD in accordance with Section 10 below.

(b) Ridesharing Program. The Developer shall promote ridesharing, in the form of carpools and vanpools, by persons employed both on the Project Site and in the surrounding area. To that end, the Developer shall:

1. provide computerized on-site carpool/vanpool matching programs, such as Ridesource;
2. participate in joint ridesharing programs with tenants, organizations, and companies both within the Project and in the surrounding area;
3. no less than once every six months, provide in a newsletter promotional materials on ridesharing to employees and tenants of the Project;
4. provide preferential locations for parking of vehicles used in carpooling or vanpooling;
5. reserve a parking space for any vanpool which registers with the Transportation Coordinator, at a 50 percent discount of the regular price charged for monthly rental of such parking space; and
6. No less than once very year, sponsor a "Transportation Day" at which transit alternatives will be promoted and opportunities afforded to enlist in ridesharing programs.

(c) Flexible Hours. The Developer will promote the use of flexible work schedules to reduce peak-hour trip generation through the following measures:

1. during the lease negotiation process, potential tenants for the Project will be encouraged to adopt flexible work schedules for the employees;

2. Building services such as HVAC and full elevator service will be made available to office tenants at the Project between the hours of 7:00 AM and 7:00 PM, Monday through Friday, at flat rates, with no premium for off-peak hours use.

(d) Transit Pass Subsidies. Developer will endeavor to lower transit costs for all workers employed at the Project. To this end, Developer will:

1. create a transit subsidy program whereby the Developer will offer a subsidy of mass transit commuting fares or passes of 12.5% to any employee at the Project, to the extent that the tenant-employer offers a matching subsidy;

2. include in all lease negotiation packages an exhibit outlining the advantages to employers and employees of subsidizing transit expenses.

Section 5. Parking

The Project will include the on-site Garage containing approximately 1155 parking spaces. It is currently anticipated that a second garage (together with the Garage, the "Garages") will be constructed on the Van Ness Site containing approximately 440-500 spaces.

(a) Parking spaces at both garages will be made available to the public, at commercially competitive rates, for all home night, weekend and holiday Boston Red Sox games and at other times that do not conflict with parking demands of the Project.

(b) Parking spaces will be made available at the Garages to area residents for overnight use at special promotional rates, initially not to exceed $30 per month, for parking after 6:00 P.M. and before 8:00 A.M., all day Saturday and all day Sunday.

Resident users of parking spaces in the Garages will be charged for use of spaces during business hours, at commercially competitive rates.

Section 6. Transit

As part of phases subsequent to Phase 1 of the Project and subject to obtaining all necessary approvals, the Developer will improve the Fenway station on the Massachusetts Bay Transportation Authority's Green Line. Improvements will include construction of a walkway along the station platform, extension of the existing canopy and construction of a stairway from the Project to the station.

Section 7. Pedestrians and Bicyclists

The design of the Project recognizes the magnitude of pedestrian traffic to, from and through the Project Site, with major directions being to/from the MBTA Green Line Fenway Station and to/from Park Drive, the Park/Boylston/Brookline intersection, and the Longwood Medical Area. The location and scale of the entrances of the Sears building, the Park Drive building and the

Brookline Avenue building have been sized and emphasized accordingly. Entrances and passageways in the existing Sears Building will be enhanced by ground floor retail uses, and the entire Project will be accessible to handicapped persons.

Sidewalk areas around the Project Site will be rebuilt and paved, and street lighting will be installed, in consultation with and according to specifications approved by the BTD and the Boston Department of Public Works.

The Developer will provide an indoor bicycle storage area conveniently located in the Garage located on the Project Site, with secure racks, stands, or lockers.

Section 8. Truck Deliveries

The following steps will be undertaken to help eliminate any adverse effect of delivery and pickup at the Project site:

(a) The establishment in the Project design of sufficient off-street loading bays so that trucks will not have to stand or park in the street. The loading area will be configured so that trucks will drive into the Garage by a one way entrance and drive out of the Garage by a one way exit;

(b) Tenant deliveries other than by courier service will be reasonably restricted to hours other than Peak Hours;

(c) Major tenant deliveries using trucks longer than 33 feet will be reasonably restricted to the hours between 6:00 P.M. and 7:00 A.M.

(d) Except in special circumstances, deliveries through the pedestrian entrances will not be allowed between 7:00 A.M. and 6:00 P.M.

(e) A 24-hour loading dock area will be maintained and attended by an on-call dockmaster to encourage off-hour deliveries.

(f) Deliveries and pickup by courier and parcel services will be through the loading dock area, and will utilize collection boxes for major courier companies.

Section 9. Construction Management Plan

Developer shall prepare in consultation with the neighborhoods, a Construction Management Plan which details measures to insure the maintenance of existing levels of service on adjacent roadways during the construction of the Project and to minimize disruption at neighboring residential sites, and shall submit said plan to the BTD for approval. Such approval shall be obtained prior to the developer obtaining any building permit from the City of Boston Inspectional Services Department (ISD). It is understood by the Developer that the development of a construction management plan is a precondition to the issuance of a building permit for the Project by ISD.

The Construction Management Plan shall include, but not be limited to, measures dealing with: proposed street occupancies; use of tower cranes; sidewalk occupancies or obstruction of pedestrian flow; materials staging; transportation and parking for construction workers; hours of construction work; materials delivery; rodent control, and truck routes.

The Construction Management Plan shall also provide that the Developer shall meet monthly with the neighborhoods to discuss the construction impacts of the Project and that the Developer will establish a twenty-four hour hotline to address neighborhood concerns with respect to construction. The Construction Management Plan shall also provide that the Developer shall provide reasonable notice to the community prior to the commencement of disruptive activities, street closings or changes to traffic flow.

Failure to comply with the provisions of the Construction Management Plan may result in withdrawal of the building permit or street occupancy permit until such time as the Commissioner of Transportation determines that the Developer is in compliance with the Construction Management Plan.

Section 11. Defaults and Remedies

In the event that the Developer shall fail to comply with or shall breach any provisions of this Agreement, and such failure or breach shall continue for 60 days after written notice thereof from the BTD, the BTD may institute any such actions and proceedings as the BTD may deem appropriate, including, but not limited to, an action to compel specific performance and/or to collect any and all damages, expenses, losses and costs caused by such failure or breach, including legal expenses. Notwithstanding the foregoing, if such failure or breach is of such a nature that it cannot reasonably be cured in 60 days, the Developer shall so notify the BTD in writing as soon as practicable, and the period shall be extended by the BTD for such additional time as is reasonably necessary to cure such failure or breach, provided, however, that such period of time may be limited to an additional period of 120 days.

Section 12. Independent Covenants

Each and every covenant contained in this Agreement is and shall be construed to be a separate and independent covenant applicable to each Component (as defined below) of the Project, and shall apply separately to each Component, and a default with respect to a particular Component under any section or provision of this Agreement shall not constitute a default with respect to any other Component. For purposes of this Agreement, "Component" shall mean (i) any portion of the Project which is located on an individual lot, or (ii) any portion of such portion located on an individual lot which is independently financed.

Section 13. Records and Reports

Developer shall keep and maintain books, records and other documents regarding compliance with this Agreement, and on an annual basis submit reports detailing factors such as observed trip generation, trip distribution, modal choice and vehicle occupancy. The Developer shall make the same available at all reasonable times for inspection, copying, audit and examination by the BTD and the community. The Developer shall also provide the

BTD with an annual report regarding compliance with this Agreement that summarizes the same within sixty days of the end of each calendar year.

Section 14. Access to Project

Developer agrees that any duly authorized representatives of the BTD shall as necessary for the enforcement of this Agreement, at all reasonable times, and upon reasonable prior notice, have access to any portion of the Project until the completion of the construction of the Project, provided, however, (a) that the BTD shall submit to the Developer within thirty (30) days from the date of execution of this Agreement a list of such duly authorized representatives, which list may be amended from time to time, (b) that any such representative shall not interfere with or cause a delay in the Developer's ongoing construction of the Project, and (c) that any such representative shall notify the Project superintendent that he or she is on the Project Site, shall wear a hard hat at all times while on the Project Site, shall follow the directions of the Project superintendent, shall have his or her designees sign a waiver of liability, and shall otherwise comply with all safety and site control requirements that may be imposed by such superintendent from time to time. It is hereby understood and agreed by the parties hereto that any such safety and control requirements shall not unreasonably interfere with or impede the BTD's enforcement of this Agreement.

Section 15. Assumption of Liability

Developer shall assume the defense of and hold the BTD, its officers, agents or employees, harmless from all suits and claims against them or any of them arising from any act or omission of the Developer, its agents or employees, of any of the covenants, agreements and obligations of the Developer under this Agreement.

Section 16. Assignment

Developer may assign its interest in this Agreement, but only subject to and by complying with the following conditions:

(1) Prior to assignment, Developer shall notify the BTD of its intention to assign;

(2) At the time of the assignment, Developer shall not then be in default of the terms and conditions of this Agreement imposed upon Developer to such date;

(3) The assignee shall expressly assume and agree to perform and comply with all the covenants and provisions of this Agreement on the part of the Developer; and

(4) There shall be promptly delivered to the BTD the original or a duplicate original of the instrument or instruments containing such assignment to and assumption by the assignee.

(5) Notwithstanding the foregoing, Developer may assign this Agreement in connection with bona fide financing of the Project as applicable.

Section 17. Waiver

No act by or on behalf of the BTD shall be, or be deemed or construed to be, any waiver of any such requirement or provision, unless the same be in writing, signed by the BTD and expressly stated to constitute such waiver. Any express waiver by the BTD of any rights, terms or conditions of this Agreement shall not operate to waive such rights, terms or conditions or any other rights, terms or conditions, beyond the specific instance of such waiver.

Section 18. Conflict of Interest

Developer covenants and agrees that it shall, in carrying out its responsibilities under this Agreement, comply strictly with each and every provision of c. 268A of the General Laws (the Conflict of Interest Law) to the full extent of the applicability of said provisions to the Developer.

Section 19. Successors and Assigns

The provisions of this Agreement shall be binding upon, and shall inure to the benefit of, the successors and assigns of the Developer (including without limitation any condominium association or other association having powers of control over the Site or any portion thereof under Chapter 183A, Massachusetts General Laws) and the public body or bodies succeeding to the interests of the BTD.

The liability of the Developer under this Agreement and under certifications and the like delivered pursuant hereto with respect to the Project shall be limited solely to the assets and property of the Developer with respect to the Project (or the applicable Component thereof) and no partner, venturer, trustee, beneficiary shareholder, officer, director or the like of the Developer, from time to time, or any such person's or entity's separate assets or property shall have or be subject to any personal liability with respect to any obligation or liability of the Developer hereunder, but this Section 19 shall not prohibit or limit an action seeking an injunction or similar remedy or specific enforcement of the Developer's obligation under this Agreement.

Section 20. Notices

All notices or other communications required or permitted to be given under this Agreement shall be in writing, signed by a duly authorized officer of the Developer, or of the BTD, and shall be deemed delivered if mailed, postage prepaid, by registered or certified mail, return receipt required, or delivered by hand to the principal office of the intended party, which is as follows unless otherwise designated by written notice to the other parties:

DEVELOPER:
Olmsted Plaza Associates
c/o JMB Urban
Four Copley Place
Suite 600
Boston, MA 02116
Attention: Mr. Patrick Lee

BTD:
City of Boston Transportation Department
One City Hall Plaza, Rm. 721
Boston, Massachusetts 02201
Attention: Commissioner

with copies to:

City of Boston Transportation Department
One City Hall Plaza, Rm. 721
Boston, Massachusetts
Attention: Special Assistant Corporation Counsel

City of Boston Law Department
One City Hall Plaza, Rm. 615
Boston, Massachusetts 02201
Attention: Corporation Counsel

Boston Redevelopment Authority
One City Hall Plaza
Boston, Massachusetts 02201
Attention: Director

Kenmore, Audubon Circle Fenway Neighborhood Initiative
c/o Fenway Community Development Corporation
P.O. Box 127
Astor Station
Boston, Massachusetts 02123

Section 21. Amendment

This Agreement, or any part thereof, may be amended from time to time hereafter only in writing executed by BTD and the Developer.

Section 22. Future Adjustments to Plan

The provisions of this Agreement reflect the existing conditions documented in the Transportation Impact and Access Plan. If, during the five years following execution of this Agreement, these conditions have changed, the BTD in accordance with Section 21 of this Agreement, may require the Developer to make reasonable adjustments to its Transportation Impact and Access Plan to respond to these changes. Any proposal shall take due recognition of fiscal, fiduciary, regulatory or other constraints on the Developer.

Section 23. Severability

Each and every covenant and agreement contained in this Agreement is and shall be construed to be a separate and independent covenant and agreement. If any term or provision of this Agreement or the application thereof to any person or circumstance shall to any extent be invalid and unenforceable, the remainder of this Agreement or the application of such term to persons or circumstances other than those as to which it is invalid or unenforceable shall not be affected thereby, and each term and provision of this Agreement shall be valid and shall be enforced to the extent permitted by law.

Section 24. Governing Law

This Agreement shall be governed and construed in accordance with the laws of the Commonwealth of Massachusetts.

Section 25. Execution in Counterparts

This Agreement shall be executed in two counterparts. All such counterparts shall be deemed to be originals and together shall constitute but on and the same instrument.

Section 26. Effective Date

This Agreement shall be deemed to become effective as of the date it shall be executed and dated by all parties.

Section 27. Expiration

This Agreement shall terminate thirty (30) years from the issuance of the initial Certificate of Occupancy, and the provisions contained herein shall be null and void as of the date of termination.

Section 28. Mitigation Expenses

All mitigation measures undertaken pursuant to this contract shall be at the expense of the Developer and no expense will be incurred by the BTD with respect to such measures.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be signed, sealed and delivered by their respective duly authorized representatives, as of the date first written above.

WITNESS:

CITY OF BOSTON TRANSPORTATION
DEPARTMENT

By:______________________________
RICHARD A. DIMINO, COMMISSIONER

DEVELOPER: OLMSTED PLAZA ASSOCIATES, a
Massachusetts general partnership

By: JMB/Olmsted Limited Partnership,
its general partner

By: JMB/Olmsted, Inc.

By: ____________________
Its:

By: Macomber Olmsted Plaza
Associates Limited Partnership,
its general partner

By: MOPA, Inc.
By: ____________________
Its

Approved as to form:

____
Corporation Counsel
City of Boston

The Commonwealth of Massachusetts
Metropolitan District Commission
M. Ilyas Bhatti, Commissioner

20 Somerset Street
Boston, MA 02108
617-727-5114

November 30, 1989

Richard Dimino, Commissioner
Boston Traffic & Parking
City Hall, Room 721
Boston, MA. 02108

Dear Commissioner Dimino:

It was a pleasure to meet with you and your staff to discuss the various traffic issues that must be considered as part of the proposed Olmsted Plaza Associates redevelopment of the former Sears building on Park Drive. We appreciate the importance of this project to the City of Boston and particularly the public park and parkway benefits that will be derived from it.

Several of the major roadways and intersections in the area are under the jurisdiction of the Metropolitan District Commission. While the Commission has a statutory responsibility to review and seek mitigation of traffic impacts through the MEPA process, it is to our mutual benefit to recognize that City and MDC responsibilities are interdependent and to coordinate those efforts. This process is underway and you have my assurance that the Commission is committed to continuing this cooperative process in achieving the necessary traffic improvements.

There are two intersections that appear to have similar problems and similar solutions; Park Drive at Beacon Street and Brookline Avenue at the Riverway. In each instance left turns are an issue, and the easing of traffic flow requires the removal of parking for which MEPA has requested further information. Assuming that the MEPA conditions are met, the MDC would concur with the proposed improvements at Park Drive and Beacon and at Brookline Avenue and the Riverway.

The remaining intersections will take additional time and data to adequately evaluate as we discussed.

I look forward to working with you to assure that this evaluation happens in a timely manner. It has been a pleasure to work with you on past projects, each of which has proved to be successful in easing the movement of traffic in Boston. I trust that this effort will move to a similarly successful conclusion.

Sincerely,

M. Ilyas Bhatti

M. ILYAS BHATTI
Commissioner

IMB:JBOB:ml

The
etropolitan Network
of Services

Parks

Beaches

Community Boating

Historic Sites

ecreational Facilities

Public Concerts

Trailside Museum

oston Harbor Islands

Metropolitan Police

Flood Control

tershed Management

Pure Water Supply

abbin, Wachusett and
Sudbury Reservoirs

Franklin Park and
Stone Memorial
Zoos

rkway, Boulevard and
Bridge System

Charles, Mystic and
Neponset Rivers

ver Brook, Blue Hills,
lm Bank, Breakheart,
Middlesex Fells, and
ly Brook Reservations

MetroParks **MetroParkways** **MetroPolice** **PureWater**

MetroBus INC

December 8, 1989

Mr. Patrick Lee
Project Manager
JMB/Urban Associates
4 Copley Place
Boston, MA 02116-6501

Dear Pat:

This letter will outline the intent of MetroBus, Inc. and Olmsted Plaza Associates to develop a transportation agreement. The purpose of this agreement is to make available certain transportation services outlined below to Olmsted Plaza by MetroBus, Inc. a transportation company of the Medical Area Service Corporation (MASCO).

MetroBus, Inc. is a wholly-owned subsidiary of MASCO and is chartered and licensed in the Commonwealth of Massachusetts to provide transportation services to non-profit institutions and for-profit companies as regulated by the Department of Public Utilities. Olmsted Plaza is a project by Olmsted Plaza Associates that will redevelop the former Sears property at the corner of Brookline Avenue and Park Drive in Boston.

MetroBus provides transportation service to MASCO member institutions consisting of the M1 Fenway/Kenmore, M2 Cambridge/LMA, M3 Lansdowne, and M4 Wentworth Shuttles. The M1, M2, and M3 Shuttles operate routes on streets that intersect with Olmsted Plaza. The M4 Shuttle operates a route that intersects the Ruggles MBTA Station on Columbus Avenue.

Olmsted Plaza will provide approximately 1.5 million square feet of development for medical research and offices that could employ as many as 4,300 people. Institutions of the Longwood Medical Area (LMA), most of whom are members of MASCO, may be primary users of this development.

Olmsted Plaza Associates intends to mitigate the traffic impact of Olmsted Plaza by encouraging employees who work at the development to use alternative transportation to commute. MetroBus' purpose is to assist MASCO and its member institutions by providing transportation services that reduce traffic in the LMA and surrounding neighborhoods.

Olmsted Plaza intends to promote and encourage the use of MetroBus'

MetroBus INC

transportation services to tenants of Olmsted Plaza and their employees including making information, schedules and tickets readily available. MetroBus will make its the M1, M2, and M3 Shuttles available to tenants of Olmsted Plaza and their employees including where feasible, the establishment of bus stops near the Plaza.

Olmsted Plaza supports shuttle service to the Ruggles MBTA Station including MetroBus' efforts to establish such a service. The Ruggles Station provides MBTA Orange Line subway and suburban Commuter Rail service. MetroBus intends to look at establishing a shuttle service between the Ruggles T Station, possibly through a change to its M4 Shuttle to Wentworth, the Longwood Medical Area and Olmsted Plaza.

Olmsted Plaza Associates and MetroBus,Inc. hereby agree to establish a cooperation agreement within 60 days that incorporates the services outlined in this letter.

Sincerely,

Lawrence K. Christiansen

Lawrence K. Christiansen
President

Accepted by:

____

Its: ____________________

**MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY**

Construction Directorate
Ten Park Plaza, Boston, MA 02116

December 14, 1989

Mr. James Keefe
Trinity Financial
294 Washington Street, Room 830
Boston, Massachusetts 02108

SUBJECT: EOEA No. 7643
Olmsted Plaza

Dear Mr. Keefe:

As per our recent discussions, the Massachusetts Bay Transportation Authority (MBTA) appreciates the positive steps that Olmsted Plaza Associates is willing to take to mitigate project impacts on Green Line service including improvements to Fenway Station.

I am hopeful that in further discussions in the upcoming weeks we will be able to come to agreement on the scope elements to be included in the proposed Fenway Station modernization, details of maintenance requirements, and schedule of activities.

I look forward to receiving your proposal for station improvements and a continued cooperative effort in the joint advancement of the Olmsted Plaza and Fenway Station modernization projects.

Sincerely,

Donald J. Kidston

Donald J. Kidston
Project Manager-Development

DJK/lan
cc: P.F. McNulty
R.A. Mancini
C.B. Steward

TRINITY
FINANCIAL

December 14, 1989

Mr. Don Kidston
Project Manager, Development
Massachusetts Bay Transportation Authority
10 Park Plaza
Boston, MA 02116

Dear Mr. Kidston:

Thank you for arranging the meeting earlier this week between representatives of the MBTA and Olmsted Plaza Associates. We are sensitive to the transportation impacts of our project and view the Fenway Park Green Line station, which adjoins our site, as an excellent opportunity to get people out of their cars and on to public transportation.

At this time, we are prepared to firm up our proposal to the MBTA in the following respects:

1. As requested, the developers will participate in the MBTA's "Adopt-A-Station" program.

2. We will make a specific financial commitment at such time when a scope of work for the station improvements has been agreed upon by our architects, Notter Finegold + Alexander, and the MBTA's design staff.

3. I have asked our architects to consider moving the station further eastbound than suggested in your preliminary plans dated April 5, 1988. The purpose of moving the platforms easterly would be to further improve access and reduce the relative isolation of the station about which many neighborhood residents have expressed concern.

4. Our participation in the "Adopt A Station" program will be limited to the station itself, and will not include improvements to the tracks, roadbed, rolling stock, etc.

5. We will also seek to undertake the improvements ourselves, as part of the development of the proposed building to be built on Park Drive.

6. Upon completion, we will maintain the station for a period of 25 years.

7. The developers and the MBTA will mutually pursue easements or other required rights from Conrail in order to make improvements to the abandoned Conrail right-of-way which is in between the existing Sears property and the MBTA right-of-way and station. The purpose of these improvements would be to improve accessibility to the station, as well as upgrade the overall appearance of the area.

8. The station improvements will be completed prior to occupancy of the second phase of the project.

9. The developers will work with the MBTA's design and operations staff to protect the safety of the public and insure that normal station operations are not interrupted during the construction phases of the project.

I hope the above is helpful to you as you continue your review of this project. I shall be contacting you in the next several weeks to arrange a meeting with the architects.

Sincerely,

James G. Keefe
for Olmsted Plaza Associates

cc: Byron Gilchrest, Macomber Development Associates
Patrick A.T. Lee, Olmsted Plaza Associates
Scott McCandless, HMM Engineering
Mel Shuman, Hale and Dorr
R. K. Umscheid, JMB/Urban Development

MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

TO:

Attendees

ROM: Donald J. Kidston
Project Manager-Development

DATE: December 12, 1989

SUBJECT: EOEA No. 7643
Olmstead Plaza

At 10:00 A.M. in the MBTA's Ten Park Plaza Offices on December 11 representatives of the MBTA and the developer of Olmstead Plaza met to review MBTA comments on the Draft Environmental Impact Report (DEIR) for the subject development.

Jim Keefe of Trinity/Olmstead Plaza Associates indicated the project schedule was as follows:

- Complete Final Environmental Impact Report (FEIR) - 12/15/89

- Commence Phase I construction - 2/1/90

Jim Keefe indicated the developers intent to participate financially in improvements to Fenway Station.

The scope and cost of these improvements were discussed:

- A preliminary plan of a proposed pocket track, J.I.W., April 5, 1988, was discussed. The developer will review the plan and provide comments to the MBTA.

- Rocco Mancini indicated he would have T.K. Dyer, Inc. prepare schematic plans for a turnback/storage track and station platforms and prepare preliminary construction cost estimate. This work may require field survey and could take some time. Upon completion, plans will be forwarded to the developer for further discussion. Other than having engaged T.K. Dyer for Fenway Station plan review, the MBTA has committed no financial or consultant resources to this project.

- The need for acquisition of CONRAIL property was identified.

Other issues addressed were:

- The developer requested a letter from the MBTA noting progress towards an agreement on station improvements by December 15 for inclusion in their FEIR.

- MBTA advised the developer on the status of other measures to improve Green Line Service including passenger equipment purchase, vehicle identification, and computer simulation of Green Line operations.

- EOTC approval may be required by the developer for construction on former railroad property.

- The Developer's construction schedule makes resolution of committments to adopt Fenway Station prior to issuance of an Executive Office of Environmental Affairs (EOEA) certificate on the FEIR highly unlikely. The developer suggested that the commitments on Fenway Station be linked to Phase II development to overcome this time constraint.

Don Kidston

Donald J. Kidston
Project Manager-Development

DJK/lan

NAME	AFFILIATION	PHONE
KIDSTON	MBTA	722-315
Tony Helco	Notter Finegold + Alexander	227-9272
Scott McCandless	HMM Associates, Inc	508.371.4000
Sean Wong	" "	"
JIM KARFA	TRINITY/OPA	483-023
Jim Alexander	Notter Finegold + Alexander	227-927
Rocco Mancini	Ⓣ Const'n	722-5450
Dave Chmielinski	MBTA	722-3489
Anthony Palmere	MBTA Operations	722-4457
ALAN CASTALINE	Ⓣ OPERATIONS	722-5731

APPENDIX VII

ORDER OF CONDITIONS

Form 5

DEP File No 6- 417
(To be provided by DEP)

City/Town BOSTON

Applicant Olmsted Plaza Associates
(Former Sears Bldg.)

Commonwealth
of Massachusetts

Order of Conditions
Massachusetts Wetlands Protection Act
G.L. c. 131, §40

From BOSTON CONSERVATION COMMISSION

To Olmsted Plaza Associates (Name of Applicant)
c/o JMB/Urban Development Company

Sears Roebuck & Company (Name of property owner)

Address Four Copley Place-Boston, MA 02116
Ph. 262-6600

Address Sears Tower-Chicago, Ill. 60684

This Order is issued and delivered as follows

☒ by hand delivery to applicant or representative on 12/15/89 (date)

☐ by certified mail, return receipt requested on ____ (date)

This project is located at 175-201 Brookline Ave./401 Park Dr./1 Fullerton St. Ward 21 P#77

The property is recorded at the Registry of Suffolk

Book 4967, 5123, 5643 Page 322, 218, 84

Certificate (if registered) ____

The Notice of Intent for this project was filed on 12/10/89 (date)

The public hearing was closed on 12/15/89 (date)

Findings

The Boston Conservation Commission has reviewed the above-referenced Notice of Intent and plans and has held a public hearing on the project. Based on the information available to the Conservation Commission at this time, the Conservation Commission has determined that the area on which the proposed work is to be done is significant to the following interests in accordance with the Presumptions of Significance set forth in the regulations for each Area Subject to Protection Under the Act (check as appropriate):

☐ Public water supply
☐ Private water supply
☐ Ground water supply

☒ Flood control
☐ Storm damage prevention
☒ Prevention of pollution

☐ Land containing shellfish
☐ Fisheries
☐ Protection of wildlife habitat

Total Filing Fee Submitted ____ State Share $775
City/Town Share $1500* (½ fee in excess of $25)

Total Refund Due $ ____ City/Town Portion $ ____ (½ total) State Portion $ ____ (½ total)

*as per City of Boston Regulations

Therefore, the Boston Conservation Commission hereby finds that the following conditions are necessary, in accordance with the Performance Standards set forth in the regulations, to protect those interests checked above. The Boston Conservation Commission orders that all work shall be performed in accordance with said conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications or other proposals submitted with the Notice of Intent, the conditions shall control.

General Conditions

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.

2. This Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.

3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state or local statutes, ordinances, by-laws or regulations.

4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   (a) the work is a maintenance dredging project as provided for in the Act; or
   (b) the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance and both that date and the special circumstances warranting the extended time period are set forth in this Order.

5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.

6. Any fill used in connection with this project shall be clean fill, containing no trash, refuse, rubbish or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles or parts of any of the foregoing.

7. No work shall be undertaken until all administrative appeal periods from this Order have elapsed or, if such an appeal has been filed, until all proceedings before the Department have been completed.

8. No work shall be undertaken until the Final Order has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is to be done. The recording information shall be submitted to the Boston Conservation Commission on the form at the end of this Order prior to commencement of the work.

9. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words, "Massachusetts Department of Environmental Protection,
   File Number 6-917

10. Where the Department of Environmental Protection is requested to make a determination and to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before the Department.

11. Upon completion of the work described herein, the applicant shall forthwith request in writing that a Certificate of Compliance be issued stating that the work has been satisfactorily completed.

12. The work shall conform to the following plans and special conditions:

Plans

Title	Dated	Signed and Stamped by	On File with

Special Conditions (Use additional paper if necessary)

(Leave Space Blank)

Plans

Title	Dated	Signed and Stamped by	On File with
Olmsted Plaza Associates Topographic Plan sheet X2	9/14/89	Richard D. Raskind #10364	Boston Conservation Commission
Olsted Plaza Site Plan	9/15/89		

Plans and calculations filed with the Notice of Intent on file with BCC

Special Conditions (use additional paper if necessary)

13. Members and agents of the Boston Conservation Commission shall have the right to enter and inspect the project site and require submittal of any da deemed necessary to evaluate compliance with this Order and the Wetlands Protection Act. This right shall run beyond the life of this permit and be a continuing order attached to the Certificate of Compliance.

14. All catch-basins, oil separators, drainage structures and similar faciliti shall be maintained on a regular basis to contain any contaminants for rec and proper disposal. This requirement will be on-going and part of the Ce of Compliance. Details of catch basins shall be submitted prior to installa

15. A copy of this Order of Conditions shall be prominentley posted on-site for public inspection. The Commission shall be provided with a telphone nu for the on-site supervisor so that any problems or questions can be quickl brought to the attention of construction personel.

16. No unstabilized fill shall be stored on site but shall be protected from e by haybales, plastic sheeting, tarps or other appropriate methods.

17. Any contaminated soil generated by this project including under ground ta removal shall be immediately removed from the site and disposed of in acco with the law. The Department of Environmental Protection and the Boston F have jurisdiction over this aspect of the project.

18. There shall be no diminution of available flood storage capacity on the si

see Attachment 1 for Special Conditions 19 & 20

(Leave Space Blank)

Issued By Boston Conservation Commission Conservation Commission

Signature(s)

This Order must be signed by a majority of the Conservation Commission.

On this 15th day of December 19 89, before me personally appeared VINEET GUPTA, to me known to be the person described in and who executed the foregoing instrument and acknowledged that he/she executed the same as his/her free act and deed

Notary Public

5/7/93
My commission expires

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land upon which the proposed work is to be done, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the Department of Environmental Protection to issue a Superseding Order, providing the request is made by certified mail or hand delivery to the Department, with the appropriate filing fee and Fee Transmittal Form as provided in 310 CMR 10.03(7), within ten days from the date of issuance of this Determination. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and the applicant.

Detach on dotted line and submit to the __________ prior to commencement of work.

To __________ Issuing Authority

Please be advised that the Order of Conditions for the project at __________

File Number __________ has been recorded at the Registry of __________ and

has been noted in the chain of title of the affected property in accordance with General Condition 8 on __________, 19____

If recorded land, the instrument number which identifies this transaction is __________

If registered land, the document number which identifies this transaction is __________

Signature __________ Applicant

Issued by the Department of Environmental Protection

Signature ____

On this ______________ day of ______________________ 19 ________ before me

personally appeared ______________________________________ to me known to be the person described in and who executed the foregoing instrument and acknowledged that he/she executed the same as his/her free act and deed

______________________________ ______________________________

Notary Public My commission expires

The applicant, the owner, any person aggrieved by the Superseding Order, any owner of land abutting the land upon which the proposed work is to be done, or any ten persons pursuant to G.L. c. 30A §10A, are hereby notified of their right to request an adjudicatory hearing pursuant to G.L. c. 30A, §10, providing the request is made by certified mail or hand delivery to the Department with the appropriate filing fee and Fee Transmittal Form as provided in 310 CMR 10.03(7), within ten days from the date of issuance of this Superseding Order, and is addressed to: Docket Clerk, Office of General Counsel, Department of Environmental Protection, One Winter Street, Boston, MA 02108. A copy of the request shall at the same time be sent by certified mail or hand delivery to the conservation commission, the applicant, and any other party.

A Notice of Claim for an Adjudicatory Hearing shall comply with the Department's Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information:

(a) the DEP Wetlands File Number, name of the applicant and address of the project;

(b) the complete name, address and telephone number of the party filing the request, and, if represented by counsel, the name and address of the attorney;

(c) the names and addresses of all other parties, if known;

(d) a clear and concise statement of (1) the facts which are grounds for the proceeding, (2) the objections to this Superseding Order, including specifically the manner in which it is alleged to be inconsistent with the Department's Wetlands Regulations (310 CMR 10.00) and does not contribute to the protection of the interests identified in the Act, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the Superseding Order;

(e) a statement that a copy of the request has been sent to the applicant, the conservation commission and each other party or representative of such party, if known.

Failure to submit all necessary information may result in a dismissal by the Department of the Notice of Claim for an Adjudicatory Hearing.

Detach on dotted line and submit to the ______________________________ prior to commencement of work.

....

To ____ Issuing Authority

Please be advised that the Order of Conditions for the project at ______________________________

File Number ______________ has been recorded at the Registry of ______________________ and

has been noted in the chain of title of the affected property in accordance with General Condition 8 on ______________ 19 ______

If recorded land, the instrument number which identifies this transaction is ______________________

If registered land, the document number which identifies this transaction is ______________________

Signature ____ Applicant

ATTACHMENT 1

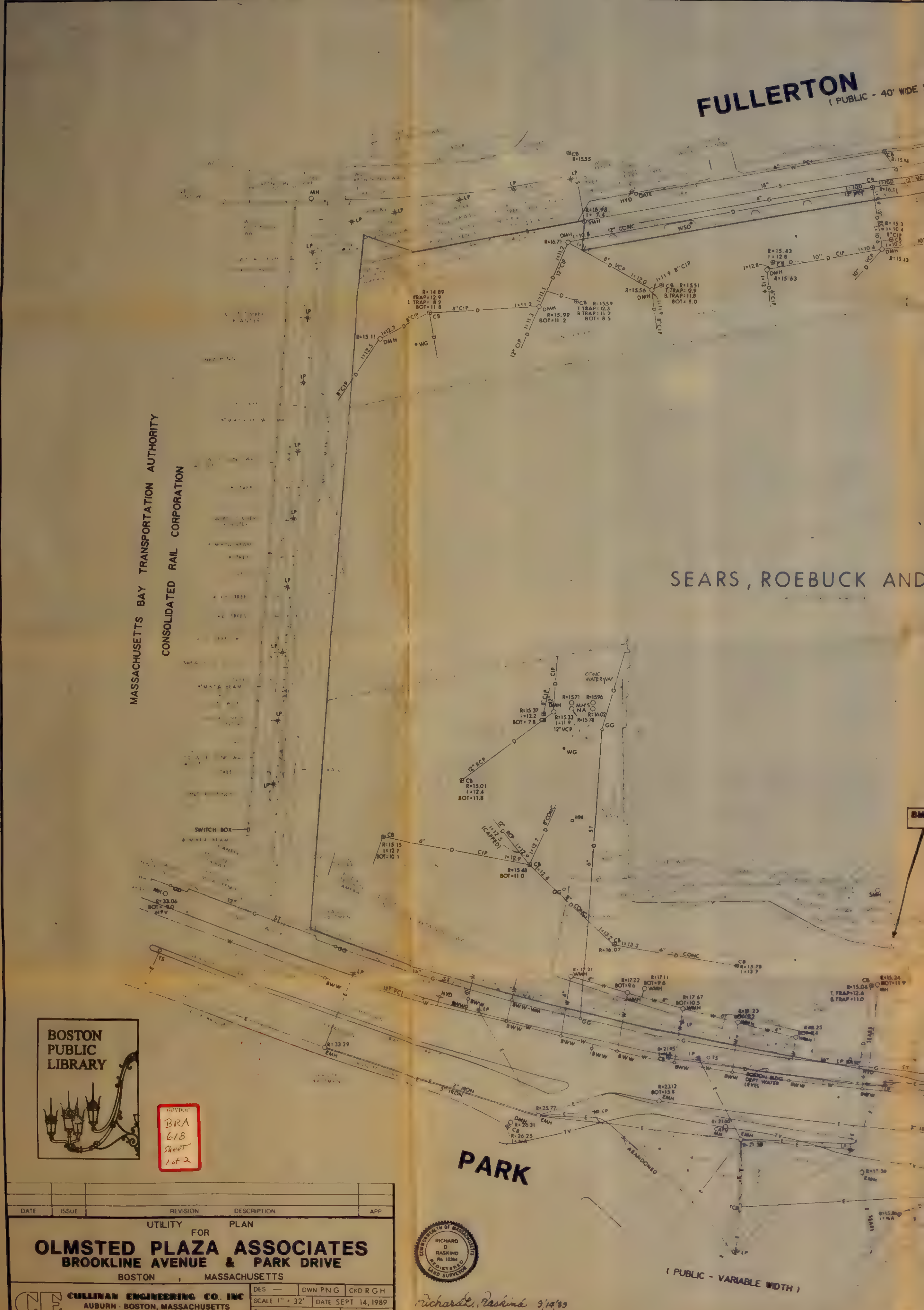
Order of Conditions for
Olmsted Plaza/Sears Building Site
DEP File #6-417
12/14/89
Boston Conservation Commission

Additional Special Conditions:

19. During construction and until landscaping has been placed and exposed soil loamed and seeded and no longer a source of silt and erosion, haybales or other suitable measures shall be placed around all drainage structures in order to collect and retain silt and prevent it from entering the drainage system. These measures shall be installed prior to commencement of construction and shall be cleaned and maintained in good working order.

20. Dust generated by the demolition/construction shall be controlled by the use of sprinkler trucks, street sweepers, etc., chemical means of dust control shall not be used. Similarly, de-icing salt shall not be used on driveways and parking areas. Sand may be substituted but site catch basins shall be cleaned as soon as possible in the Spring to recover accumulated sand and silt.

7142 088



BOSTON
PUBLIC
LIBRARY

GOVDOC
BRA
618
Sheet
1 of 2

DATE	ISSUE	REVISION DESCRIPTION	APP

UTILITY PLAN
FOR

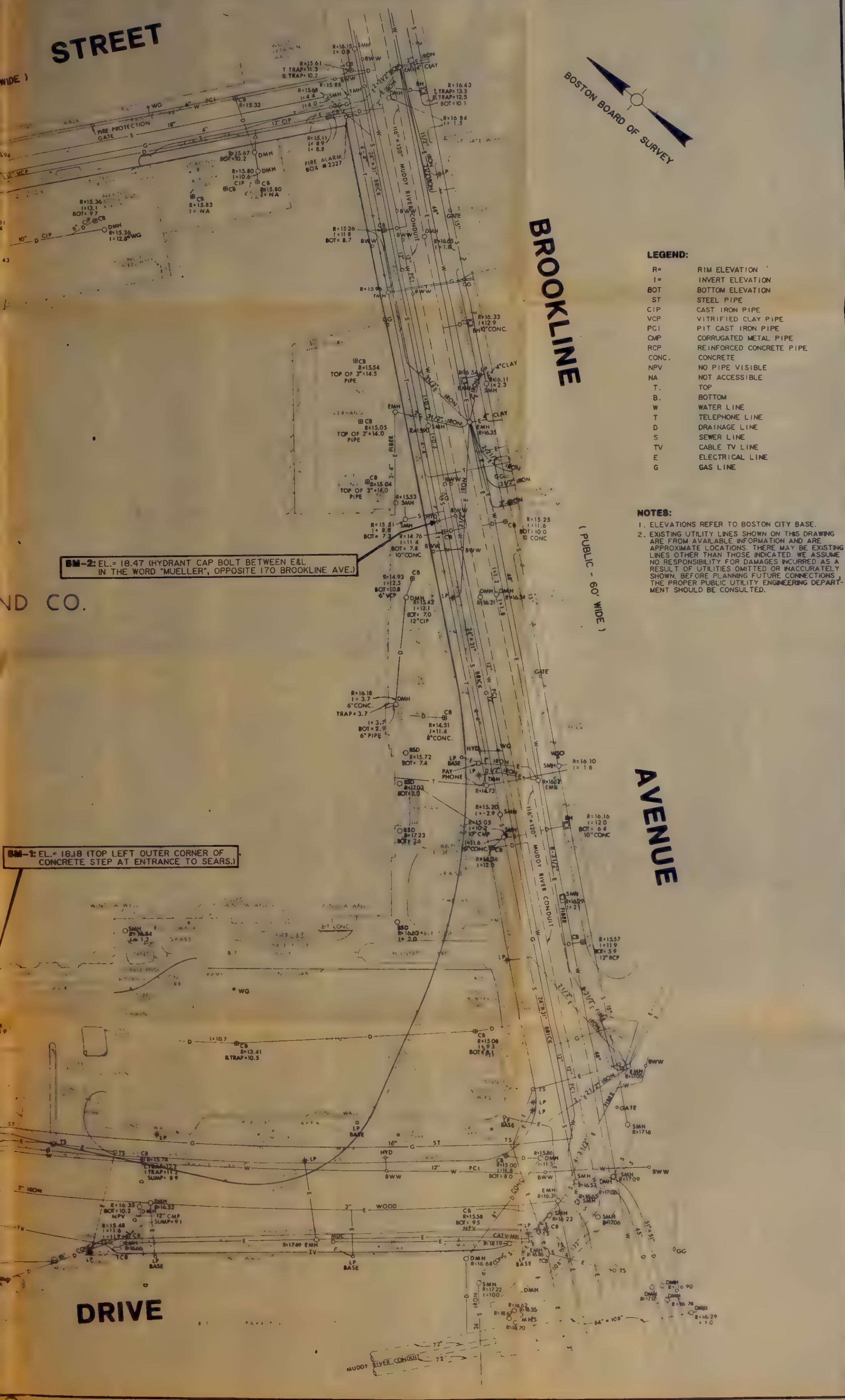
OLMSTED PLAZA ASSOCIATES
BROOKLINE AVENUE & PARK DRIVE
BOSTON , MASSACHUSETTS

CULLINAN ENGINEERING CO. INC
AUBURN · BOSTON, MASSACHUSETTS
CIVIL ENGINEERS - LAND SURVEYORS

DES —	DWN PNG	CKD RGH
SCALE 1" = 32'	DATE SEPT 14, 1989	
PLAN NUMBER 892017-04 / T32 / 89	SHEET 3 OF 3	

RICHARD D RASKIND No. 10364

Richard D. Raskind 9/14/89

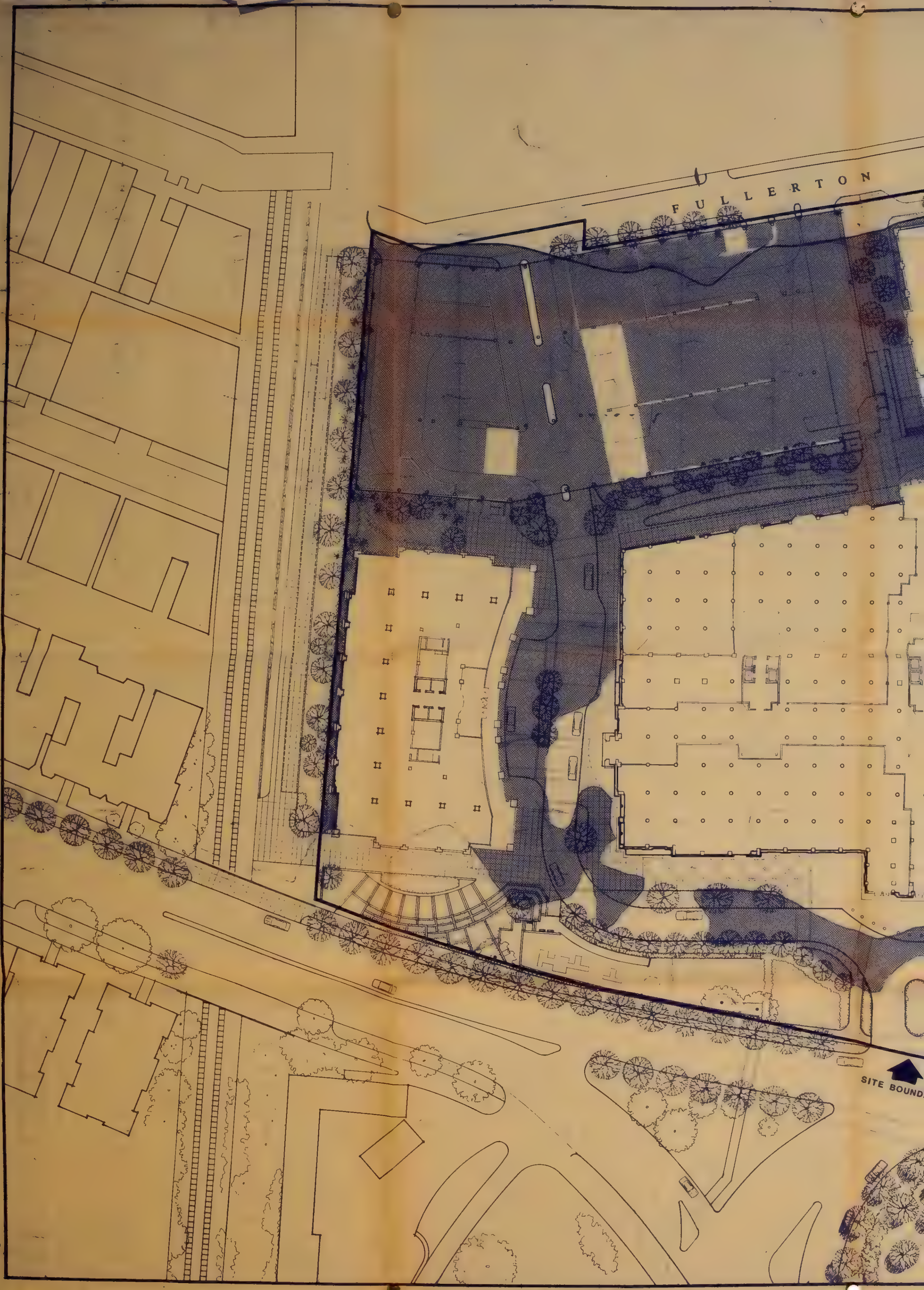

STREET
(PUBLIC - 60' WIDE)
BROOKLINE
AVENUE
DRIVE
BOSTON BOARD OF SURVEY
ND CO.
MUDDY RIVER CONDUIT
116" x 120" MUDDY RIVER CONDUIT
24" x 31" BRICK
FIRE PROTECTION GATE
FIRE ALARM BOX #2327
PAY-PHONE
BM-2: EL.= 18.47 (HYDRANT CAP BOLT BETWEEN E&L IN THE WORD "MUELLER", OPPOSITE 170 BROOKLINE AVE.)
BM-1: EL.= 18.18 (TOP LEFT OUTER CORNER OF CONCRETE STEP AT ENTRANCE TO SEARS.)

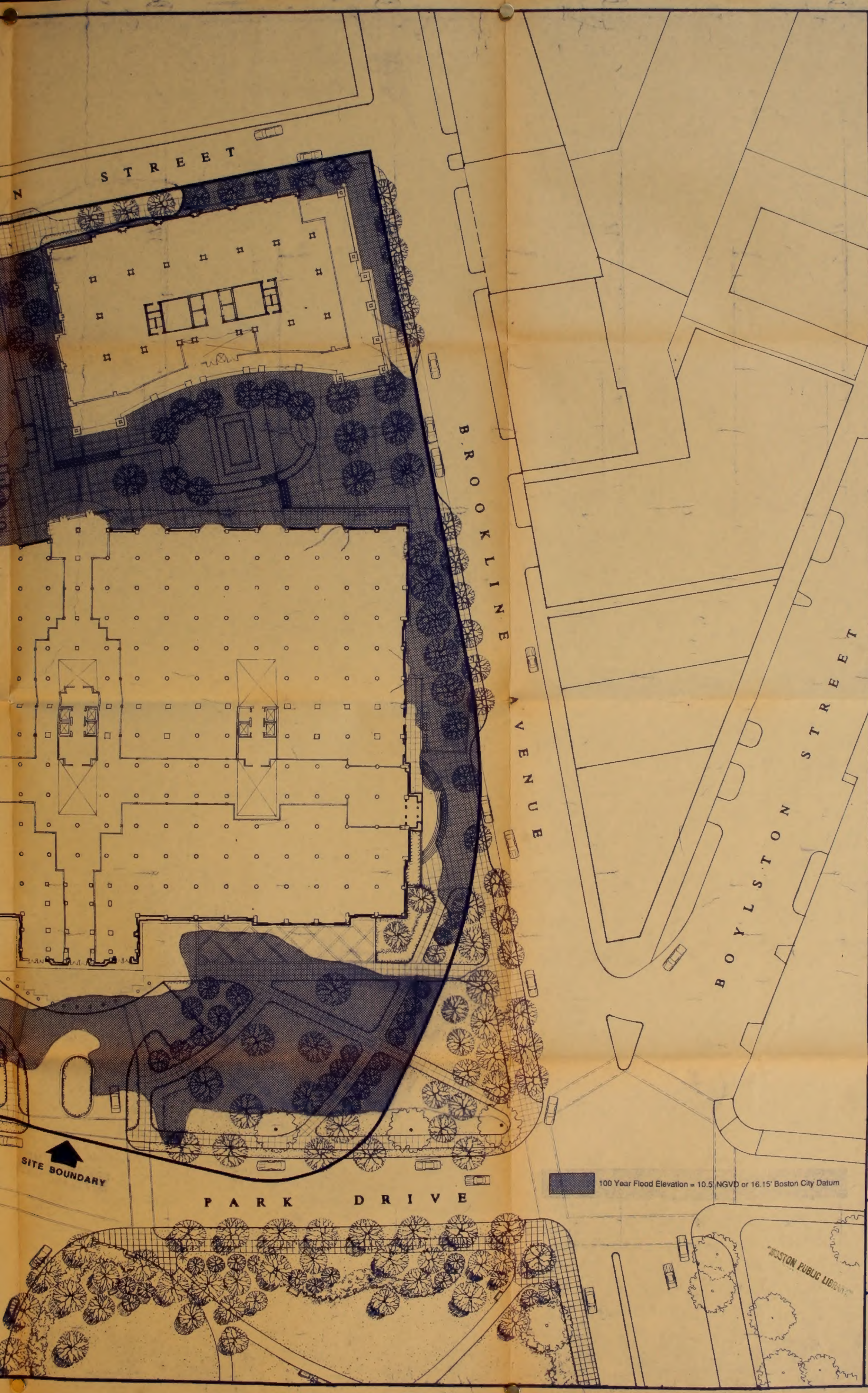
LEGEND:

R=	RIM ELEVATION
I=	INVERT ELEVATION
BOT	BOTTOM ELEVATION
ST	STEEL PIPE
CIP	CAST IRON PIPE
VCP	VITRIFIED CLAY PIPE
PCI	PIT CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
RCP	REINFORCED CONCRETE PIPE
CONC.	CONCRETE
NPV	NO PIPE VISIBLE
NA	NOT ACCESSIBLE
T.	TOP
B.	BOTTOM
W	WATER LINE
T	TELEPHONE LINE
D	DRAINAGE LINE
S	SEWER LINE
TV	CABLE TV LINE
E	ELECTRICAL LINE
G	GAS LINE

NOTES:

1. ELEVATIONS REFER TO BOSTON CITY BASE.
2. EXISTING UTILITY LINES SHOWN ON THIS DRAWING ARE FROM AVAILABLE INFORMATION AND ARE APPROXIMATE LOCATIONS. THERE MAY BE EXISTING LINES OTHER THAN THOSE INDICATED. WE ASSUME NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER PUBLIC UTILITY ENGINEERING DEPARTMENT SHOULD BE CONSULTED.


FULLERTON
SITE BOUND



OLMSTED PLAZA

309 PARK DRIVE
BOSTON
MASSACHUSETTS

OLMSTED
PLAZA
ASSOCIATES INC

A JOINT VENTURE OF

J.M.B.\URBAN
DEVELOPMENT Co

AND

MACOMBER
DEVELOPMENT ASSOC.

• • •

DEVELOPMENT CONSULTANT

TRINITY
FINANCIAL

• • •

ARCHITECT

NOTTER
FINEGOLD
+
ALEXANDER
INC

STRUCTURAL ENGINEER

WEIDLINGER ASSOC.

M.E.P./CIVIL ENGINEER

R.G. VANDERWEIL
ENGINEERS INC.

LABORATORY CONSULTANT

CAMBRIDGE
LABORATORY
CONSULTANTS

LANDSCAPE ARCHITECT

THE HALVORSON Co

PROJECT No
DATE 15 SEPTEMBER 1989
SCALE 1"=32
DRAWN MTB
CHECKED

REVISIONS

No	DATE	DESCRIPTIONS

SHEET TITLE

SITE PLAN

SHEET NUMBER

GOVDOC
BRA
618
Sheet
2 of 2

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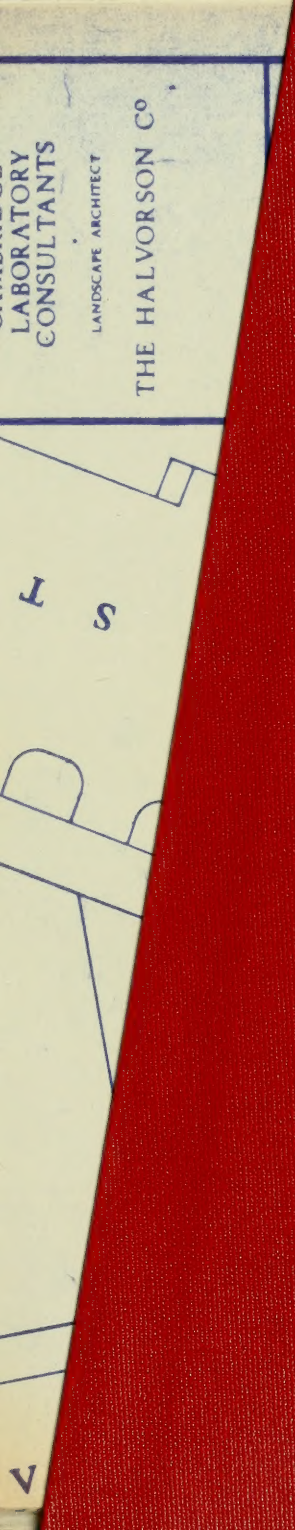
LABORATORY
CONSULTANTS
LANDSCAPE ARCHITECT
THE HALVORSON Co